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2002 Annual Report

The Air Pollution Control Program produces an annual report to provide Missouri residents information about the status of air quality in the state. The publication is made available here in electronic format. The publication is divided into chapters for quicker download.

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Air Pollution Control Program

Annual Report 2002



Missouri Department of Natural Resources
Air and Land Protection Division

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Introduction

In 2002, many milestones were reached in the fight to protect Missouri's air quality. The St. Louis ozone nonattainment area met the one-hour ozone standard for the first time since monitoring began. Air monitors in Herculaneum measured airborne lead levels below the National Ambient Air Quality Standard for lead for third and fourth quarters. The new Missouri Emissions Inventory System went online allowing companies to submit their 2002 Emissions Inventory Questionnaires over the Web.

This annual report sheds light on the cooperative efforts of stakeholders and the Air Pollution Control Program to protect the air Missouri residents breathe. By working with industry, residents and other government agencies, the air quality in Missouri continues to improve and meet new milestones.

This report is one method in which the Air Pollution Control Program distributes information to Missouri residents, industry and other interested parties. It contains information about the health impact of air pollutants, describes the major types of air pollutants, the actions taken to control air quality and the major milestones in Missouri air quality in the past year.

More information on the **bold** faced terms throughout the report can also be found in the Glossary at the end of the report. After reading this report, if you have questions, please call the Air Pollution Control Program at 1-800-361-4827 or (573) 751-4817.

VISIT OUR WEB SITE

at www.dnr.mo.gov/air.htm
for more information on:

- Vehicle emissions testing;
- Regulations for businesses and industry;
- Missouri Emissions Inventory System;
- Current air quality in St. Louis and Kansas City;
- Operating Permits on Public Notice.

As a recipient of federal funds, the Missouri Department of Natural Resources does not discriminate on the basis of race, color, religion, national origin, age, sex, or disability. Any person who believes he or she has suffered discrimination may file a complaint with the Department of Natural Resources or with the Office of Equal Opportunity, U.S. Department of the Interior, Washington, D.C., 20240.



2002 Air Quality Highlights

Ground-Level Ozone in St. Louis

During the 2002 ozone season, there were seven **exceedances** of the one-hour **ozone** standard in the St. Louis area, including five in Missouri. This represents an increase of five from the 2001 **ozone** season. In spite of this increase, all sites in the St. Louis area now meet the **National Ambient Air Quality Standard (NAAQS)** for **ozone**. In order to meet the standard, there can be no more than three **exceedances** per site over a three-year period, so one year with an unusually high number of **exceedances** will not necessarily cause a violation. In St. Louis' case, the site that has been in violation, West Alton, had only one **exceedance** during 2002, which brought its three year total to three **exceedances**-the maximum allowable without being in violation. All other sites that had **exceedances** during 2002 were also under that level.

St. Louis One-Hour Ozone Attainment

The 1990 Amendments to the Clean Air Act set a deadline of Nov. 15, 1996, for complying with the **ozone** standard, but the Environmental Protection Agency (EPA) realized that some areas may be affected by air pollution transported from outside of **nonattainment areas**. In response to this realization, EPA allowed areas including St. Louis to apply for extensions to the **attainment** deadline. The St. Louis **nonattainment area** clearly demonstrated that emissions that came from outside the area were adversely impacting the air quality.

On June 26, 2001, EPA published a final rule in the Federal Register granting an **attainment** date extension for the St. Louis **ozone nonattainment area**. The St. Louis area was to retain its "moderate" **nonattainment** classifi-

cation and have a new **attainment** deadline of Nov. 15, 2004. EPA determined that the plans submitted by Missouri and Illinois included sufficient control measures to demonstrate that the St. Louis area will reach the **national ambient air quality standard**.

However, on Nov. 25, 2002, the 7th Circuit Court ruled that EPA does not have the authority to extend the St. Louis **attainment** deadline under the Clean Air Act. The court sent the case back to EPA with instructions to bump up St. Louis to a "serious" **nonattainment area** effective immediately. This court ruling became final in January 2003, and on January 30, EPA published a final rule in the Federal Register making St. Louis a serious **nonattainment area**.

This action came on the heels of three years of complete, quality assured ambient air quality monitoring data for 2000-2002, demonstrating the St. Louis area's **attainment** with the one-hour **ozone** standard. A Redesignation Demonstration and Maintenance Plan for the St. Louis area has been submitted to EPA requesting that the St. Louis **nonattainment area** be redesignated as an **attainment** area for the one-hour **Ozone National Ambient Air Quality Standard (NAAQS)**. On Jan. 30, 2003, the same date the bump up notice was published, EPA published a proposal to approve the redesignation request and maintenance plan. On May 12, 2003, the EPA published a final rule redesignating the St. Luis area to **attainment**. (See Page 9 for more information.)

NOx SIP Call

Because some **nonattainment areas** are affected by air pollution from sources outside the area, initiatives

involving the study of transported emissions and regional controls are becoming more common. In October 1998, EPA issued a rule known as the **Oxides of Nitrogen (NO_x) State Implementation Plan (SIP) Call**. This NO_x SIP Call would have required Missouri to reduce emissions of NO_x, a commonly transported air pollutant that contributes to ozone formation. EPA's modeling indicated that the transport of pollutants from Missouri contributes to ozone problems in Illinois, Indiana, Michigan and Wisconsin. After several legal challenges, EPA's NO_x SIP Call became effective for 19 of the 22 originally named states, excluding Missouri, Georgia and Wisconsin.

In 2000, the Missouri Air Conservation Commission adopted a statewide rule to reduce NO_x emissions. Missouri's statewide NO_x rule is intended to improve air quality in the St. Louis ozone nonattainment area. Missouri's statewide NO_x rule, 10 CSR 10-6.350, will reduce the emissions of NO_x from electric generating units and establish a NO_x emissions trading program for the entire state. Some facilities have started reducing their NO_x emissions ahead of schedule and have requested early reduction credits (ERCs) under the program.

EPA published a NO_x SIP call for eastern one-third of Missouri on Feb. 22, 2002, in the Federal Register. Missouri continues to evaluate the current statewide NO_x regulation and the NO_x SIP call to determine what its response will be.

Emissions Banking and Trading

The department participated in creating an amendment to the Missouri Air Conservation Law, which allows the development of an emissions banking and trading program for the nonattainment and maintenance areas in Missouri. This

legislation became effective Aug. 28, 2001. It requires the **Missouri Air Conservation Commission** to adopt a rule that will set up a "Missouri Air Emissions Banking and Trading Program."

The department developed the rule through a workgroup process with interested parties, including facilities from the **nonattainment** and maintenance areas, environmental groups and EPA. The workgroup process began in October 2001 and was completed in March 2002. The department expects the final rule to be effective in March 2003.

Emissions banking and trading programs allow facilities to generate emission reduction credits (ERCs) by releasing less than the applicable emission standard for a particular pollutant. The ERCs can be banked, traded or sold to a different facility.

These programs are helpful to facilities that are planning to expand an existing operation or build an additional facility in a **nonattainment** or maintenance area. These programs are also economically beneficial to facilities that consistently emit below their allowable levels.

This program should help Missouri maintain the **National Ambient Air Quality Standards** established by the Clean Air Act while fostering economic growth. As established in the law, an environmental contribution of three percent will be subtracted from the bank of credits each year to protect air quality.

Gateway Clean Air Program

The Gateway Clean Air Program entered its third year of operation as an essential part of Missouri's efforts to bring St. Louis into **attainment** with the one-hour ozone standard. Even though the St. Louis area may now be deemed in compliance with the one-hour standard, the program will

remain an important component of the plan to maintain the air quality and move toward further improvement under the new, stricter eight-hour ozone standard. The program tests vehicles in St. Louis, St. Charles and Jefferson counties and in the city of St. Louis, using an enhanced emissions testing procedure. Also, vehicle emissions testing entered the third year of operation in Franklin County, using an improved basic emissions test.

More information about this program can be by visiting the following Web sites: gatewaycleanair.com, www.dnr.mo.gov/alpd/apcp/gcap/ or www.cleanair-stlouis.com/gcap/.

Fuels

The department continues to develop methods for the St. Louis and Kansas City areas to reduce emissions of volatile organic compounds (VOCs) that contribute to the formation of ground-level ozone. St. Louis is required to reduce VOCs due to its status as an ozone nonattainment area, while the Kansas City reductions are contingency controls in response to violations of the one-hour ozone standard in 1995 and 1997.

Stage II Vapor Recovery is one of the most effective means of reducing ozone. The department has developed the Missouri Performance Evaluation Test Procedures (MOPETP) to ensure that the Stage I and II vapor recovery equipment in the St. Louis ozone nonattainment area meet the mandatory 95 percent efficient requirement. MOPETP is a comprehensive set of tests designed to determine the efficiency of gasoline vapor recovery systems and components. The department's Air Pollution Control Program approved a vapor recovery system called the Balance System. To date, 10 different manufacturers of vapor recovery equipment have been tested and approved. These manufacturers hold



MOPETP approvals for more than 100 components of the Balance System vapor recovery equipment.

As of Jan. 1, 2001, only MOPETP-approved systems and components are authorized for use in the St. Louis **ozone nonattainment area**. Auto manufacturers are in the process of conducting "Novel Facility" MOPETP testing to demonstrate these initial fueling facilities meet the efficiency requirements.

An operating permit process is used to ensure that vapor recovery equipment continues to function properly after being installed. To date, all service stations in the St. Louis **ozone nonattainment area** have applied for and received an initial operating permit. The operating permit requires facilities to pass tests prior to receiving a renewed operating permit. Operating permits are renewed on a five-year cycle.

Since June 1, 1999, retail gasoline stations in the St. Louis ozone nonattainment area are under federal requirements to sell reformulated gasoline (RFG). This is a gasoline formula designed to burn cleaner by adding of an oxygenate, such as ethanol, and adjusting the amount of various components already found in conventional gasoline. The fuel is required all year, not just during the summer. It reduces exhaust and evaporative emissions. The program is administered and enforced by EPA. Phase II of the RFG program, which began Jan. 1, 2000, requires additional emission reductions compared to Phase I. Phase II requires a minimum of 25 percent VOC reductions, a 20 percent reduction in air toxins, and a five to seven percent reduction in **NO_x** emissions. Another important benefit of the fuel program is that it helps the emission control equipment continue to perform well throughout the life of the vehicle.

In 2001, low Reid Vapor Pressure (RVP) gasoline was used during the summer months in the Kansas City **ozone** maintenance area. During summer months, low RVP gasoline evaporates less than conventional gasoline, which reduces emissions of VOCs. Low RVP gasoline was first required in St. Louis in 1994 and in Kansas City in 1997. In early 2001, an amendment was adopted to lower the summer RVP requirement in Kansas City from 7.2 pounds per square inch (psi) to 7.0 psi, beginning June 1, 2001. The 7.0 psi RVP requirement will help Kansas City maintain compliance with the **ozone** standard.

Emissions Fees Workgroup

In conjunction with public meetings held by the **Missouri Air Conservation Commission**, industry representatives and staff from the department's Air Pollution Control Program met with commission members in St. Louis, Kansas City and Osage Beach during fall 2001 to review the cost of efforts to reduce air pollution in Missouri. This workgroup looked at if the existing air emission fee was enough to fund all the efforts needed to comply with the federal Clean Air Act. The workgroup decided that an increase in the fee was needed to maintain existing air pollution control efforts in the state.

The department's Air Pollution Control Program proposed a rule amendment to raise the air emission fee and submitted the proposed rule amendment to the **Missouri Air Conservation Commission** at its March 28, 2002, public hearing. The Commission adopted the proposed rule amendment at its April 25, 2002, raising the fee from \$25.70 to \$31 per ton of regulated air pollutant.

Operating Permits

In 2002, the Operating Permit Unit started implementing the Governor's Streamlining Recommendations for operating permits (see Page 10),

accepted responsibility for many new initiatives and progressed toward issuing all of the initial Part 70 (Title V) Operating Permits. At year's end, 410 Part 70 Operating Permits, or 90 percent, had either completed the initial technical review, had been issued or closed out. Permits that had undergone technical review still need to be reviewed by the public and EPA. The process can be completed in two to three months, although comments from the public, EPA or routine objections received by the Air Pollution Control Program could delay this process.

One of the new initiatives carried out by the Operating Permit Unit in 2002 involved the 1990 Amendments to Section 112 of the Clean Air Act, which included a new section 112(j), entitled "Equivalent Emission Limitation by Permit." In states with a Title V program, section 112(j)(3) requires the owner or operator of a major source in a source category for which EPA failed to publish a section 112(d) standard to submit a permit application 18 months after the missed publishing deadline. The requirements for section 112(j) are contained in 40 CFR Part 63, Subpart B, *Requirements for Control Technology Determinations for Major Sources in Accordance with Clean Air Act, Sections 112(g) and 112(j)*. On April 5, 2002, 40 CFR Part 63, Subpart B, was amended and required installations to submit a 112(j) Part 1 application prior to May 15, 2002. The Air Pollution Control Program received 254 112(j) Part 1 applications.

The second new initiative undertaken by the Operating Permit Unit is the implementation of 10 CSR 10-6.350, *Emission Limitations and Emissions Trading of Oxides of Nitrogen*. The Operating Permit Unit assisted in the development of guidelines, database needs and procedures to put this rule into practice. In addition, the Operating Permit Unit reviewed and

verified the NO_x early reduction credit requests for 2000 and 2001.

Overall, the Operating Permit Unit completed 765 permitting actions. Those actions involved Part 70, Intermediate and Basic Operating Permit applications (initial, renewal, amendments, administrative amendments, minor modifications and significant modifications), Operating Permit Applicability determinations, Section 112(j) determinations and NO_x Banking/Trading projects.

In 2002, the Air Pollution Control Program continued to post drafts of operating permits on the program's Web site for public review. The documents remain on the Web throughout the public notice process, to enable citizens to have easier access to the documents. To view the operating permit drafts, visit www.dnr.mo.gov/alpd/apcp/PermitPublicNotices.htm.

In addition to operating permit projects, the Operating Permit Unit is involved in rule revisions regarding 10 CSR 10-6.065, *Operating Permits*. In March 25, 2002, EPA published a notice of deficiency in the *Federal Register* for the Operating Permit Program. The Notice of Deficiency was in response to comments received from the Sierra Club and National Environmental Development Association/Clean Air Regulatory Project. The program met with the Sierra Club and EPA Region 7 to address these issues. The Notice of Deficiency was expected from EPA since some of the rule changes agreed to with EPA Region 7 could not be finalized by April 1, 2002, EPA's response date. The notice of deficiency pinpointed three areas of the operating permit rule that needed revisions: minor and significant modification procedures in regards to acid rain; certification by a responsible official for minor permit modifica-

tions; and contemporaneous notice of off-permit changes. The program has initiated the rule changes and expects to complete them within the 18-month time frame allotted in the notice.

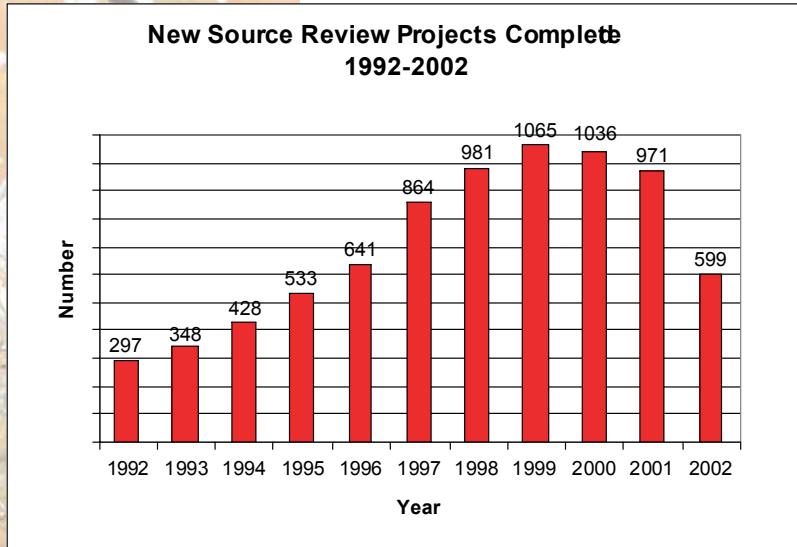
The Operating Permit Unit is entering the renewal phase for the first round of operating permits. The State sent out 614 letters in July 2002 informing installations of the expiration date of the respective operating permits. With the operating permit renewal comes 40 CFR Part 64, *Compliance Assurance Monitoring (CAM)*. CAM plans submitted by the installations will be included in the renewal permits.

New Source Review Permits

In 2002, the New Source Review Unit (Construction Permits Unit) started implementing the Governor's Streamlining Recommendations for Construction Permits (see Page 10), completed approximately 600 projects and worked with the Initial Review Unit to expedite the permit process. The New Source Review/Initial Review Units received over 800 projects. The New Source Review Unit completed over 600 permit actions including major construction permits issued for Empire Electric, Continental Cement and Mississippi Lime Company. Creating and putting into practice the Initial Review Unit relieved the New Source Review Unit of over 200 projects. This allowed the New Source Review Unit to issue permits and respond to applicants in a more timely manner.

In 2002, the program continued to post drafts of construction permits that required public notices on the program's Web site for public review. To view draft construction permits visit www.dnr.mo.gov/alpd/apcp/PermitPublicNotices.htm.

Note: The 2002 project total does not include the New Source Review Projects processed by the Initial Review Unit.



Initial Review Unit

The Initial Review Unit successfully tackled many problems facing the Air Pollution Control Program's Permitting Section by speeding up the permit review process. The completeness checks performed by the unit have significantly reduced the number of days needed to process a construction permit. By screening out incomplete applications, the Initial Review Unit reduced the time that applications that are delayed in order to wait for additional information. The Initial Review Unit is responsible for administrative completeness checks, technical reviews, air quality

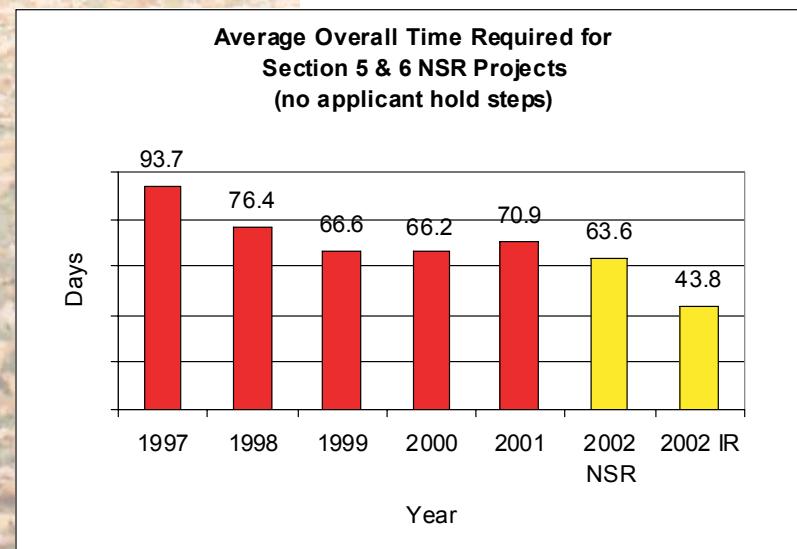
analysis and draft permits for all stationary and portable sources including quarry operations, asphalt plant and concrete batching operations. The chart below shows an example of the progress made by the Initial Review Unit in its first year.

Enforcement Actions and Results

The department's Air Pollution Control Program performed 1,682 stationary source inspections in the 2002 calendar year. The program also issued 1168 Notices of Violation (NOVs). Settlements were reached in 214 cases. These settlements resulted in paid penalties totaling \$491,813 and suspended penalties totaling \$405,483. The department referred 20 cases to the Missouri Attorney General's Office.

Asbestos

Federal regulations require that all buildings must be inspected for the presence of asbestos-containing materials (ACM) before being renovated or demolished. A Missouri-certified inspector must conduct the inspection. In most cases, ACM must be removed before beginning renovation or demolition. During 2002, the Air Pollution Control Program received notification of approximately 420 regulated projects and conducted approximately 130 inspections.



Under certain conditions, owners or contractors of renovation operations must submit a notice of intent to renovate a structure to the Air Pollution Control Program for review and approval 10 working days prior to the start of the project. This is required when the project involves regulated asbestos containing materials in quantities of 160 square feet, 260 linear feet or 35 cubic feet off of facility components. Owners or contractors must also submit a similar 10 working day notice for demolition

operations involving a regulated structure. The notice for demolition, however, is required for all regulated structures regardless of whether the structure contains any asbestos containing materials. Residential structures with four or fewer dwelling units are not subject to the regulations. However, when more than one residential structure is involved on the same city block per one-year period, or if the residential structure will be used for fire training, the regulations apply.

Only a registered asbestos abatement contractor can perform asbestos abatement activities involving regulated asbestos containing materials. Contractors are required to register with the department on an annual basis. This registration ensures that contractors continue to meet the department's requirements to perform asbestos abatement work. Currently, the department has 112 asbestos contractors registered with the department.

Individuals who want to work on asbestos related as a worker, supervisor, inspector, management planner, project designer, or air sampling professional must also obtain occupational certification from the department. Certification is required to make sure that these individuals meet all of the requirements to work in their respective discipline including having attended the appropriate training course offered by a Missouri-accredited training provider. Currently the department has certified 1,369 asbestos workers, 931 asbestos supervisors, 468 inspectors, 130 management planners, 77 project designers, and 300 air sampling professionals. Individuals who wish to maintain their certification must attend annual refresher training and reapply annually.

To make sure that the training received by individuals pursuing

asbestos occupational certification is adequate, training providers must have their training programs accredited by the department. Training Providers are required to have their programs re-accredited biennially, and are periodically audited to make sure that they continue to comply with all applicable rules, regulations and policies. Currently, the department has accredited 25 training providers to provide asbestos-related training. During the past year, the department has performed 16 audits of these providers to make sure they are providing adequate training to these individuals.

Concentrated Animal Feeding Operations

The Missouri Air Conservation Commission has passed regulations that limit the amount of acceptable odor from Concentrated Animal Feeding Operations (CAFOs). The odor regulations designate the use of a scentometer as a screening tool. The rules states that if an odor is detectable at a dilution ratio of 5.4 parts of carbon filtered air to 1 part odor laden air with a scentometer then an air sample should be collected and sent to an olfactometry laboratory. The olfactometry laboratory would then use an odor panel to determine the detection threshold and the intensity of the odor of the sample. If the olfactometry laboratory determined the detection threshold to be above seven or the intensity level to be above a level equivalent to 225 ppm of n-butanol, then the source of odor would be in violation. The odor rules were to be fully implemented by Jan. 1, 2002.

The CAFO odor rules came under scrutiny at the Dec. 6, 2001, Missouri Air Conservation Commission meeting. Premium Standard Farms (PSF) voiced concerns with the wording of the rule, specifically the

detection threshold limit of seven in the CAFO portion of the rule (10 CSR 10-3.090(5)(C)(2)(A)). PSF and the Air Pollution Control Program independently determined that the olfactometry detection threshold of seven in the rule was too low. At the request of the commission, the program stated at the December 2001 commission meeting that they would use enforcement discretion until the rule could be reevaluated.

The program conducted research to determine if the numbers used in the rule are too low for the regulatory standard and too high for the current n-butanol standard. The detection threshold stated in the rule will be changed from seven to a number that will correlate roughly with a 7:1 scentometer level to insure consistency in the odor related rules. This research included data collection to determine how the rule should be changed. Over 150 scentometer readings and olfactometry samples were collected in the field. An appropriate detection level was determined from this research and levels suggested in the literature.

Missouri Emissions Inventory System

An online data entry system developed by the department is enabling companies to electronically submit emissions data required annually. The new Missouri Emissions Inventory System (MoEIS) cuts the time it takes a company to complete its Emissions Inventory Questionnaire (EIQ), which is due April 1. MoEIS pulls the static data about a facility from year to year, reducing the amount of data entry involved. Companies need only to enter the information that changes, such as annual throughputs and certain worksheets. MoEIS also has built-in quality checks to help ensure accurate data entry. As of the end of February, 32 facilities had submitted their EIQs via MoEIS online.

In order to promote submitting EIJs online, from December 2002 through February 2003, the department offered 12 workshops throughout the state to show companies how to use the software. More than 300 consultants and industry representatives attended the workshops. Workshop participants received a user ID and password as well as an interactive training CD.

Facilities that did not attend the workshops can acquire a user ID and password by contacting the department's Air Pollution Control Program. The Air Pollution Control Program's staff also is available to help facilities and answer questions. Staff can be reached via the Web at www.dnr.mo.gov/prod/moeis/main/contactus or by calling the toll-free hotline, 1-866-MoEIS4U or (573) 751-4817. For more information about MoEIS visit www.dnr.mo.gov/alpd/apcp/MOEISupdate.htm

The Small Business Assistance Program

Small businesses are often focused on day-to-day operations and may find it difficult to keep up with changing air pollution regulations and requirements. Section 507 of the 1990 federal Clean Air Act Amendments recognized this and required states to develop a three-component assistance program to help small businesses. The three components are a small business ombudsman, a technical assistance program for small businesses and a compliance advisory panel. In Missouri, the compliance advisory panel is known as the Small Business Compliance Advisory Committee.

The Small Business Compliance Advisory Committee has six members. Two are appointed by the governor, one each is appointed by the majority and minority leaders of the Missouri House and Senate, and one is appointed by the director of

the Department of Natural Resources. The committee has the following responsibilities:

- Receive reports from the small business ombudsman (governor's office);
- Evaluate the impact of the Air Conservation Law and related regulations on small business;
- Make recommendations to the Department of Natural Resources, the **Missouri Air Conservation Commission** and the General Assembly regarding changes in procedure, rule or law that would help small businesses comply with the Air Conservation Law;
- Make recommendations to the **Missouri Air Conservation Commission** on rules to expedite the review of modifications for small business; and
- Conduct hearings and make investigations consistent with the purposes of the small business technical assistance activities.

Currently there are six people serving on the committee chaired by Jack Lonsinger. Jack Lonsinger, Dan Bunch and Doug Weible represent industry. Bruce Morrison and Caroline Pufalt represent the general public. Walter Pearson represents the Department of Natural Resources.

Small businesses face compliance issues in environmental areas other than air pollution. Steve Mahfood, Director of the Department of Natural Resources, asked the Small Business Compliance Advisory Committee to expand its scope to deal with these other issues.

The Outreach and Assistance Center, a non-regulatory service of the Department of Natural Resources, offers small business technical assistance activities. Outreach and Assistance's business assistance unit carries out the activities and provides administrative support to the Small Business Compliance Advisory Committee. The mission of the

department's Outreach and Assistance Center is to provide information, assistance, education and training to business owners, farmers, local governments and the general public on how to control or reduce pollution. For more information, contact the Outreach and Assistance Center at 1-800-361-4827 or (573) 526-6627.

Cooperative Development of Regulations

Involving the public, environmental groups and industry in the process of making air quality rules helps to create fair, effective regulations that have broad support. In 2002, the department continued its commitment to public participation by convening workgroups to help develop air regulations. A workgroup brings industry and the public together with government agencies to share concerns and exchange ideas while developing regulations.

For example, the department worked with leaders from industry, environmental organizations and local governments to improve air quality in the Kansas City area. To help develop an air quality improvement plan for the Kansas City **ozone** maintenance area, the department participated as a member of the Mid-America Regional Council. The Kansas City **ozone** maintenance area includes Johnson and Wyandotte counties in Kansas and Clay, Jackson and Platte counties in Missouri.

In addition, the department actively participates in air quality meetings of the two major metropolitan planning organizations and the East-West Gateway Coordinating Council in St. Louis. At these public meetings, the department provides updates on air quality projects and discusses issues, proposed rules and plans with other participants.

ST. LOUIS REACHES MILESTONE IN BATTLE TO REDUCE OZONE

In 1991, the city of St. Louis and St. Louis, Jefferson, St. Charles and Franklin counties were designated as a "moderate nonattainment" area for ground-level **ozone** under the federal Clean Air Act. This means the area did not meet the federal health-based standard for this pollutant. Ground-level **ozone** is not emitted directly into the atmosphere, but forms in the presence of sunlight and warm temperatures when **oxides of nitrogen** and Volatile Organic Compounds react with oxygen. Exposure to **ozone** can contribute to health problems by irritating the respiratory system, causing chest congestion, chest pains, nausea and labored breathing.

In order to reach **attainment** with the one-hour **ozone** standard, the area could have no more than three **exceedances** over a three-year period at any given monitoring site. The St. Louis **nonattainment area** reached this major milestone in 2002, for the first time since monitoring began in the 1970's. Consequently, the Department of Natural Resources has applied to EPA to redesignate the area to **attainment** with the health-based standard.

EPA has proposed to approve the department's redesignation request as well as the associated Maintenance Plan, which shows how the department will maintain its improved air quality over the next 10 years. The Maintenance Plan includes all of the controls put into place to bring the area into compliance and also contains contingency measures should additional violations occur. These measures will make sure that the air quality does not backslide.

The St. Louis community has been instrumental in reaching this milestone. Citizens, industry and government agencies joined together to reduce **ozone**. In recent years, several controls have been put into action to reduce the amount of ground-level **ozone**. Some of the control measures include reformulated gasoline, Stage II vapor recovery nozzles on area gas pumps, the enhanced vehicle emissions inspection program known as the Gateway Clean Air Program and numerous industrial controls.

Citizens have also altered their daily activities to help in the efforts. By carpooling, waiting until the evening to refuel cars, using mass transit and engaging in other voluntary behavioral changes, individuals have reduced **ozone**-causing emissions, especially on days forecasted to have high **ozone** concentrations.

Although the area met the standard in 2002, on Nov. 25, 2002, the 7th Circuit Court of Appeals found that EPA erred in granting St. Louis an extension to its deadline for reaching **attainment**. Under the Clean Air Act, **nonattainment areas** classified as "moderate", such as St. Louis, had until November 1996 to meet the one-hour **ozone** standard. In June 2001, EPA granted an extension allowing St. Louis until November 2004 to meet the standard. The court sent the case to EPA to take immediate action to reclassify the area to "serious" nonattainment. A "serious" classification requires stricter controls. In keeping with the court decision, in January EPA published notice that the St. Louis **nonattainment area** would become a "serious" **nonattainment area**.

The proposal to redesignate the area to **attainment** and the final rule reclassifying the area to serious were published simultaneously in the *Federal Register*. In its proposal to redesignate the St. Louis **nonattainment area** to **attainment**, EPA is taking into consideration public comment on the bump up to "serious" nonattainment. If EPA decides to redesignate St. Louis as an **attainment** area, it is believed the states will not be legally required to put into practice the additional controls required of a "serious" **nonattainment area**.

Although the St. Louis area met the one-hour **ozone** standard, the battle to reduce **ozone** is far from over. This past year, a federal appeals court upheld the eight-hour **ozone** standard, which is even stricter than the one-hour standard. In December 2002, Gov. Bob Holden received a letter from EPA requesting his recommendation on geographic boundaries for the eight-hour **ozone nonattainment areas** by April 15, 2003. EPA subsequently extended this deadline to July 15, 2003. The new standard will have consequences for both St. Louis and Kansas City.

Ozone season officially begins April 1 and ends Oct. 31. Throughout the season, monitors in the St. Louis **nonattainment area** record the **ozone** levels at 11 sites in Missouri and five sites in Illinois. The **nonattainment area** includes St. Louis City, St. Charles, Jefferson, St. Louis and Franklin counties in Missouri and Madison, Monroe and St. Clair counties in Illinois.

PERMIT STREAMLINING WORKGROUPS

The Air Pollution Control Program participated in the Governor's Streamlining Efforts – Missouri Results Initiative since 2001. The issue being addressed is permit efficiency in the Construction and Operating Permit units. The mission of the Missouri Results Initiative is to reduce permit processing time by 80 percent.

The Missouri Results Initiative is conducting two parallel workgroups within the Air Pollution Control Program, one for Construction Permits and one for Operating Permits. The workgroups consist of members from the Air Pollution Control Program, the department's regional offices, environmental groups and regulated industry. The primary goals are to improve the quality of air permits, decrease the number of complaints and issues and improve turnaround time on issuing permits while continuing to improve and protect the air quality of Missouri.

The workgroups conducted walkthroughs; flowcharted the permitting processes and identified a target for the 80 percent reduction. The workgroups presented recommendations to the department's management and received direction on putting it into practice and developed action plans to start the approved recommendations.

The Operating Permit workgroup presentation consisted of both recommendations and other options to consider. The recommendations and options are as follows:

Recommendations

1. One-person stop/login and completeness check;
2. Provide more focused assistance to regulated industry during permit development, through industry specific workshops and site visits by review engineers;
3. State provide local agencies, contractors and industry updates on templates, policies, EPA guidance and feedback, etc., and local agencies provide the state – workload status;
4. Create a culture of sharing information and experience;
5. Combine peer review and executive reviews into one review by Unit Chief; and
6. Conduct the 45 day EPA Review and 30 day public notice period at the same time;

Other Options Considered:

1. Electronic permit application;
2. Basic Permits; and
3. Integration of Construction and Operating Permits or Unified Review Process

The one-person stop/login and completeness check is in the process of being put into practice. To start this process, the Permit Section is moving the login and completeness check of the operating permit applications/notifications to the Initial Review Unit. After finalizing the procedures, the Permit Section planned to begin initiating the transfer of completeness check duties to the Initial Review by December 2002.

The communication recommendations of more focused assistance to the regulated industry, improved communication between the local agencies, contractors, industry and the state and creating a culture of sharing information and experience are in the

process of being put into practice. To start these recommendations, the State is keeping industry informed. The Governor's Streamlining Recommendations were presented to both the Air Program Advisory Forum and the

Missouri Air Conservation

Commission. Some of the mechanisms and commitments made to improve communication between regulated industry, local agencies, contractors and the state:

- Revise and post the revised Operating Permit Forms and Instructions on the web
- Conduct industry specific workshops
- Post issued operating permits on the web
- Have review engineers visit sites to get clarification on issues during technical review and
- Have regular coordination meetings with local agencies.

The Operating Permit Unit completed implementation of the recommendation to combine peer and executive review into one review by the unit chief. Currently, the unit chief is reviewing all projects, but not all projects will be able to be completed without a peer review. With new engineers, the unit chief has the discretion to require a peer review prior to the executive review. In addition, the unit chief also has the discretion to send projects to the section chief for review or upper management informational purposes.

The Operating Permit Unit is not recommending to combine the 45 day EPA Review and 30 day public notice period at the same time. On Jan. 29, 2002, the U.S. District Court for the District of Columbia issued an opinion on the *Sierra Club v. US EPA*, which discussed concurrent review of "proposed" permits. Based on legal

review of the opinion it has been suggested the Air Pollution Control Program not pursue this recommendation.

In regards to the Basic Permits option, the workgroup is finalizing a recommendation for the Basic Permits. Prior to a recommendation, the Air Pollution Control Program has initiated efforts to revise 10 CSR 10-6.065, *Operating Permits*, to exempt portable installations from the requirements of Basic Operating Permits. In addition, the Operating Permit Unit is updating the General Operating Permit Notifications and Instructions for specific source categories as well as the Generic Operating Permit Forms and Instructions.

The electronic permit application is an excellent idea, but due to the significant outlay of funding and manpower needed to put this option into operation, it is not currently being started. Perhaps using the recommendations above will lay the necessary groundwork to use to the electronic path.

The integration of construction and operating permits option is too early to put into practice. As the procedure was outlined, it would not accomplish the goal of one permit per installation and less review time per permit per installation. The Department of Natural Resources is open to revisiting this initiative in the future after the first round of issuing operating permits is completed.

The program is also working to implement the recommendations of the Construction Permit Workgroup. The recommendations are as follows:

Recommendations

1. Expand and market the exemption list;
2. Missouri Permit Required Form;
3. Permit by rule;
4. Speed up billing;
5. New permitting process; and
6. Improve reviewer satisfaction

The workgroup found that many applicants were not aware of the exemptions and that there might be opportunities to add exemptions. A new stand-alone exemption regulation has been drafted and several new exemptions were added. Examples of the new exemptions are dry cleaners, small sawmills and auto-body repair shops. The rule is now in the formal rulemaking process, and is expected to be final in late fall 2003.

Many applicants write to ask for a determination that no construction permit is required for their project in question. Often the applicant knows, and has clearly determined that a permit is not required, but feels that a letter from the agency is good "insurance" against potential future enforcement actions. These permit determination requests just burden the system, as permit engineers must respond to these requests. The workgroup suggested that the program develop a form that applicants could use to document their determination. The program is currently working with a contractor to develop this form, and expects that it will be available by late fall 2003.

Permit by Rule is a concept by which common air pollution sources could agree to a set of standard conditions in lieu of being subject to a case-by-case permit review. The applicant would simply notify the agency of its intent to construct, pay a review fee and begin construction. Once operating,

the department would inspect the new facility to make sure that it is complying with the established conditions. The program drafted a new regulation to implement this recommendation, and it is currently in the formal rulemaking process. Non-heatset printing, surface coating and animal incinerators and crematories will be the first three categories considered. The program is also working with the construction industry to develop conditions for limestone quarries, asphalt plants and cement batch plants. Again, this rule is expected to be final in late fall 2003. There will be an opportunity to add additional categories in future rulemakings.

When a permit review is complete, the air law requires that review fees be paid before a permit is issued. The workgroup found that this was an inherent delay requiring a fee letter be sent to the applicant, and then waiting as the applicant responds with a fee payment. This can easily take 10 days to two weeks. To solve this, the program is now accepting payments by debit and credit card. A convenience fee is added to cover the costs, but most applicants are willing to pay for the convenience.

The workgroup found that too many applications were incomplete and too many applications are on hold awaiting additional information from the applicant. There are other ways to convey the information needed to write a permit besides the traditional application forms. A promising concept that the workgroup discussed at length was for the program to develop a certification process for consultants or industry. Applicants could use certified professionals to not only prepare applications but to prepare draft permits. State permit

review resources are limited, but by using this approach everyone could take advantage of experienced air pollution professionals around the state. Draft permits would be submitted with senior review staff overseeing final reviews. While this concept has much promise, there are many hurdles to putting it into practice. One challenge is to maintain consistent reviews. Necessary tools and resources would have to be developed so that these outside professionals could do the job properly. The program is developing a proposal to pilot this approach with a consultant. While it is expected that this pilot will take months to complete, it is believed that this concept holds much promise for future applicants that need quick reviews.

The workgroup recognized that staff turnover continues to be a problem in the construction permit unit. The work is demanding, and often the reward for a job well done is additional projects to review. There are many reasons for staff turnover, but an important one is noncompetitive salary. The workgroup recommended that the department address this issue in some way. State budget concerns are a stumbling block to making much progress on this at this time. A taskforce was established at the department level to look at staffing issues and the concerns raised by the Construction Permit Workgroup have been shared with this task force.

Implementing these recommendations is expected to improve both the construction and operating permit processes, making it simpler and quicker. This is part of program's mission and much progress has already been made.

Major Air Pollutants

The measurements for air quality in Missouri are the **National Ambient (outdoor) Air Quality Standards** established by EPA under the Clean Air Act. The standards address six “criteria pollutants” considered harmful to public health and the environment: **ozone, lead, inhalable particles, carbon monoxide, nitrogen dioxide and sulfur dioxide**. These standards are found on Page 15.

Ozone

Ground-level **ozone** is a colorless gas; the most harmful part is sometimes called “smog.” **Ozone** is not directly emitted. It forms on hot, stagnant summer days when sunlight causes a reaction between volatile organic compounds (VOC) and **nitrogen oxides (NO_x)**. Vehicles, power plants and industrial boilers are common sources of NO_x. Gasoline-powered vehicles and manufacturing operations are major sources of VOCs.

There are two types of **ozone**: stratospheric (upper atmosphere) and ground-level **ozone**. **Ozone** in the stratosphere occurs naturally and is desirable, shielding the earth from harmful ultraviolet rays. **Ozone** at the ground level irritates the respiratory system, causing congestion, chest pains, nausea and labored breathing. It also aggravates existing lung and heart conditions such as asthma.

Airborne Lead

In Missouri, mainly lead smelters produce airborne lead and its compounds. Airborne **lead** poses the greatest danger to children under age six, therefore the standard has been established to protect their health. In 1985, 73 percent of airborne **lead** came

from vehicle exhaust pipes. By 1988, it decreased to 34 percent due to federal controls on gasoline that started in the mid-1970s.

Inhalable Particles

Inhalable particles include airborne dust, pollen, soot and aerosol sprays. Scientists also refer to these as “particulate matter.” Current federal standards apply to particles less than 10 microns in diameter, or **PM₁₀**, emitted mainly by vehicles, industry and farms. Wind and rainfall cause seasonal variations in **PM₁₀**. In 1997, EPA set new standards for even smaller particles less than 2.5 microns in diameter, or **PM_{2.5}**.

Carbon Monoxide

Carbon monoxide (CO), formed by the incomplete combustion of fuel, is one of the most common pollutants. More than 75 percent of CO emissions come from vehicle exhaust. The highest concentrations are caused by heavy traffic in metropolitan areas. Though deadly, CO changes quickly to carbon dioxide, which is not dangerous.

Nitrogen Dioxide

Almost all **nitrogen dioxide** is man-made. When fuel is burned above 1200 degrees Fahrenheit, **nitrogen dioxide** can form. Principal sources of **nitrogen dioxide** include power plants, industrial boilers and vehicles.

Sulfur Dioxide

Sulfur oxides form through the burning of fuels that contain sulfur, such as coal and oil, by **smelting** metals and by other industrial processes. **Sulfur dioxide (SO₂)** composes about 95 percent of these gases.

Other Air Pollutants

In addition to the six criteria pollutants, the Air Pollution Control Program regulates other pollutants, including asbestos and hazardous air pollutants.

Asbestos

Asbestos is a naturally occurring mineral that takes the form of hollow microscopic fibers. Before being identified as a cancer-causing agent, asbestos was widely used for insulation and fireproofing. With age, it breaks down and becomes a hazard to anyone who breathes its airborne fibers. Federal and state laws regulate the removal of asbestos from buildings and the Department of Natural Resources monitors these activities.

Hazardous Air Pollutants (HAPS)

Some air pollutants can cause quick and painful death, cancer, reproductive disorders and environmental damage such as acid rain. EPA has designated these pollutants as hazardous air pollutants. These pollutants may present a hazard to public health and safety if released in sufficient quantity.



Clean Air Standards

The Clean Air Act established two types of national air quality standards, primary and secondary. Primary standards set limits to protect public health, including the health of "sensitive" populations such as children, the elderly and those with respiratory illnesses. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation and buildings.

New Standards

In 1997, EPA established new health-based standards for ground-level **ozone** and **fine particulate matter**. Extensive scientific review showed that the changes to the standards were necessary to protect public health and the environment. However, the new standards were challenged in court. In May 1999, the U.S. Court of Appeals for the District of Columbia Circuit declared that the new standards were not enforceable. The U.S. Supreme Court heard EPA's appeal of the decision. The Supreme Court decision upheld the new EPA standards, although it ordered EPA to revise its **ozone** strategy. It also required EPA to continue to apply the previous **ozone** and particulate matter standards.

Fine Particulate Matter: **PM_{2.5}** versus **PM₁₀**

In revising the air quality standards, EPA created new standards for **PM_{2.5}** (fine particulate matter less than 2.5 microns in diameter). EPA's scientific review concluded that fine particles

(**PM_{2.5}**) that penetrate deeply into the lungs are more damaging to human health than the coarse particles known as **PM₁₀**. Fine particles are more likely than coarse particles to contribute to such health effects as premature death, increased hospital admissions and emergency visits, especially for the elderly and individuals with cardiopulmonary disease. However, coarse particles can accumulate in the respiratory system and aggravate health problems such as asthma. Therefore, the standards for **PM₁₀** particles are retained.

Air Quality Monitors in Missouri

In 2002, the Missouri Air Pollution Monitoring Network included 165 monitors of three types: national monitors, state and local agency monitors, and special-purpose monitors. National monitors are used to provide data on national trends. State and local agencies operate permanent monitors to measure ambient concentrations of pollutants on the list of **National Ambient Air Quality Standards**. Special-purpose monitors are placed to gather representative data as well as worst-case occurrences. Data is also being collected at 24 meteorological monitors operating throughout the state. The data collected at these monitors is used for analysis and modeling purposes.

For more information on the Missouri Air Pollution Monitoring Network visit www.dnr.mo.gov/alpd/esp/esp_aqm.htm.

National Ambient Air Quality Standards

CRITERIA AIR POLLUTANT	AVERAGING TIME	PRIMARY STANDARD	SECONDARY STANDARD	HEALTH EFFECTS
Carbon Monoxide	Eight-hour maximum ^a	9 ppm (10 mg/m ³)	None	Impaired vision and manual dexterity, weakness and mental dullness. At high levels: vomiting, fast pulse and breathing, followed by slow pulse and breathing, then collapse and unconsciousness.
	One-hour maximum ^a	35 ppm ^b (40 mg/m ³) ^c	None	
Lead	Maximum Quarterly Arithmetic Mean	1.5 µg/m ³	Same As Primary Standard	Low doses damage the central nervous system of children and unborn infants, causing seizures, mental retardation and behavioral disorders. In children and adults lead causes fatigue, disturbed sleep, decreased fitness and damage to kidneys, liver and blood-forming organs. High levels damage the nervous system and cause seizures, coma and death.
Nitrogen Dioxide	Annual Arithmetic Mean	0.05 ppm (100 µg/m ³)	Same As Primary Standard	Lung inflammation and lower resistance to infections like bronchitis and pneumonia. Suspected of causing acute respiratory diseases in children.
Ozone	One-hour average ^a Eight-hour average	0.12 ppm (235 µg/m ³) 0.08 ppm	Same As Primary Standard	Throat irritation, congestion, chest pains, nausea and labored breathing. Aggravation of existing lung or heart conditions, allergies and asthma-. Ozone is especially harmful to those who work or play outside. Ozone is also harmful to plant life, damaging forests and reducing crop yields.
Fine Particulate Matter (PM _{2.5})	Annual Arithmetic Mean Three year average 24-hour average, 98 th percentile	15 µg/m ³ 65 µg/m ³	Same As Primary Standard	Contribute to premature death, increased hospital admissions and emergency visits, especially for the elderly and individuals with cardiopulmonary disease.
Particulate Matter (PM ₁₀)	Annual Arithmetic Mean 24-hour average ^f	50 µg/m ³ 150 µg/m ³	Same As Primary Standard	Increased likelihood of chronic or acute respiratory illness. Difficulty breathing, aggravation of existing respiratory or cardiovascular illness and lung damage.
Sulfur Dioxide	Annual Arithmetic Mean 24-hour maximum ^a Three-hour maximum ^a	0.03 ppm (80 µg/m ³) 0.14 ppm (365 µg/m ³) 0.5 ppm (1300 µg/m ³)		Irritation of throat and lungs with difficulty in breathing. Aggravation of existing respiratory or cardiovascular illness.

a Not to be exceeded more than once a year for primary and secondary standards.

b mg/m³ = milligrams per cubic meter.

c Established for a three year average of the fourth highest daily maximum value.

d ppm = part per million.

e mg/m³ = micrograms per cubic meter.

f No more than one expected exceedance, three year average.

Missouri's Air Quality

Missouri's Air Quality

The air quality in Missouri generally meets EPA's accepted levels. The St. Louis area has historically violated the one-hour **ozone** standard, but at the end of the 2002 **ozone** season, it met the standard (see Page 9). A small area near a **lead smelter** in Jefferson County exceeds federal standards for airborne **lead** (see Page 26) but has been making progress in lowering ambient air **lead** levels.

EPA will soon designate areas as **attainment** or nonattainment for the eight-hour **ozone** and **PM_{2.5}** standards. Both St. Louis and Kansas City recorded **exceedances** of the

eight-hour standard and will be considered for nonattainment. St. Louis also has one site that is currently over the **PM_{2.5}** standard.

One site in St. Louis and a small site near Joplin are in violation of the 24-hour **PM₁₀** standard. A rare **exceedance** of the **carbon monoxide** standard was recorded in St. Louis late in 2002. EPA and the department will make a decision on whether this incident constitutes a violation after conducting an investigation.

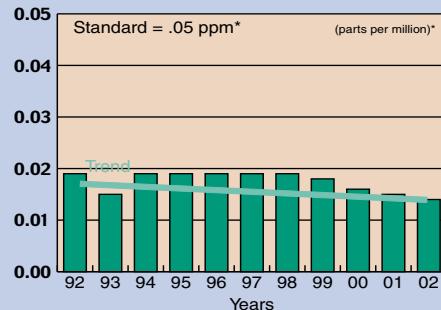
Air Quality Trends

The department monitors air concentrations of the six criteria pollutants

Air Quality Trends at Selected Locations

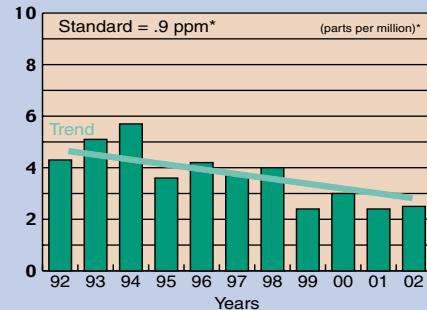
NITROGEN DIOXIDE ANNUAL MEAN, ppm

South Lindbergh 1992-2002



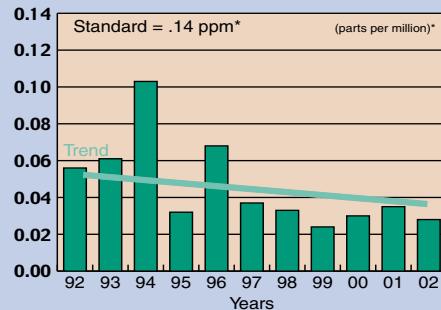
CARBON MONOXIDE 2nd 8-hr MAX, ppm

St. Ann/Breckenridge Hills 1992-2002



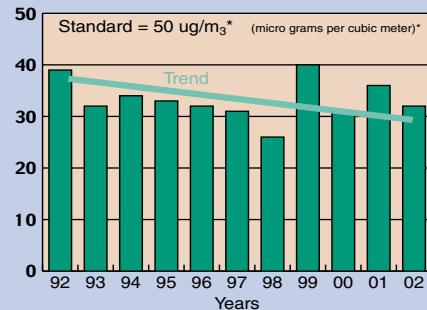
SULFUR DIOXIDE 2nd 24-hr MAX, ppm

South Charleston, Springfield 1992-2002



PM₁₀ ANNUAL MEAN, ug/m³

St. Joseph Pump Station 1992-2002



at selected locations throughout the state. Most areas of the state are in attainment of the air quality standards.

The graphs on Page 16 are representative of general trends of ambient air data from four pollutants including CO, NO_x, SO_x and PM₁₀. See Major Air Pollutants on Page 13 for more information on sources of these pollutants and their health effects. The overall trend as shown by the four graphs on Page 16 is improved air quality.

Emission Trends

The emission trends graphs that follow show the total emissions of the criteria pollutants that Missouri facilities reported for the years 1993

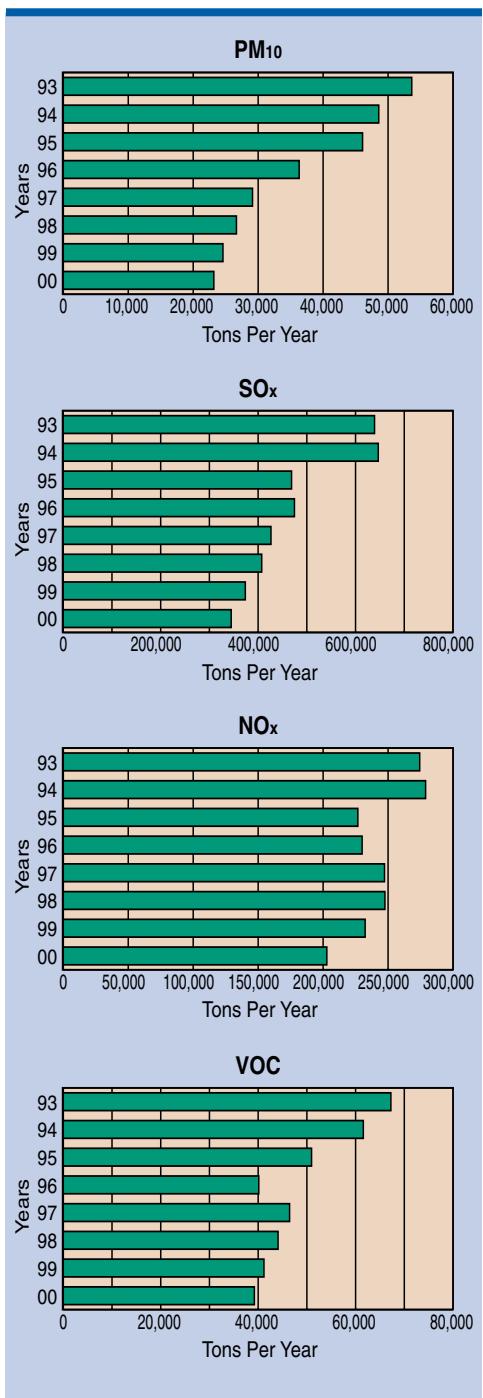
to 2001. As reflected in the graphs, facilities have generally reported decreased emissions. Since 1993, facilities reduced PM₁₀ emissions 59 percent, while VOC emissions dropped nearly 48 percent. Sulfur oxide emissions dropped 40 percent, NO_x emissions dropped 31 percent and there is a 30 percent decrease in lead emissions. CO is the only pollutant to show an increase in emissions.

NO_x emissions are expected to decline between now and 2007 due to EPA's NO_x State Implementation Plan (SIP) call. If published for Missouri, the SIP call will require a reduction in NO_x emissions of approximately 35 percent from the eastern one-third of Missouri.

Missouri has a statewide NO_x rule that will achieve slightly more emission reductions from electrical generating units in the entire state.

The tables below show relative contributions from major industrial sources.

Annual Reported Emissions



Top Point Emission Sources for PM ₁₀	Tons of PM ₁₀ contributed by these sources in 2001	Percent of total
(1) Electricity Generation	4,728.38	21.6%
(2) Charcoal Crushing	2,590.99	11.8%
(3) Cement Production	2,039.93	9.3%
(4) Sand and Gravel Processing	1,835.96	8.4%
(5) Lime Storage	1,636.78	7.5%
(6) All Others	9,055.93	41.4%
Total:	21,887.97	

Top Point Emission Sources for SO _x	Tons of SO _x contributed by these sources in 2001	Percent of total
(1) Electricity Generation	258,069.84	67.9%
(2) Lead Refining	80,250.91	21.1%
(3) Cement Production	10,900.08	2.9%
(4) Beer Production	6,839.50	1.8%
(5) Lime and Limestone Production	5,456.12	1.4%
(6) Aluminum Products Production	3,713.56	1.0%
(7) Chemicals	2,652.30	0.7%
(8) All Others	9,055.93	3.2%
Total:	379,938.70	

Top Point Emission Sources for VOCs	Tons of VOCs contributed by these sources in 2001	Percent of total
(1) Charcoal Production	6,096.22	17.1%
(2) Motor Vehicle Production	5,214.57	14.6%
(3) Aluminum Products Production	2,036.14	5.7%
(4) Cement Production	1,980.83	5.5%
(5) Electricity Generation	1,522.24	4.3%
(6) Plastics Production	1,476.41	4.1%
(7) All Others	17,387.57	48.7%
Total:	35,714.28	

Top Point Emission Sources for NO _x	Tons of NO _x contributed by these sources in 2001	Percent of total
(1) Electricity Generation	150,434.97	79.6%
(2) Cement Production	15,371.01	8.1%
(3) Lime Production	4,182.33	2.2%
(4) Oil and Gas Pipelines	3,831.99	2.0%
(5) Wire Production	2,359.97	1.2%
(6) Beer Production	1,484.40	0.8%
(7) All Others	11,338.28	6.0%
Total:	189,002.95	

Air Quality Index: Ozone

Index Values	Levels of Health Concern	Cautionary Statements
0-50	Good	None
51-100*	Moderate	Unusually sensitive people should consider limiting prolonged outdoor exertion.
101-150	Unhealthy for sensitive groups	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
151-200	Unhealthy	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
201-300	Very unhealthy	Active children and adults, and people with respiratory disease such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
301-500	Hazardous	Everyone should avoid all outdoor exertion.

* Generally, an AQI of 100 for ozone corresponds to an ozone level of 0.08 parts per million (averaged over 8 hours).

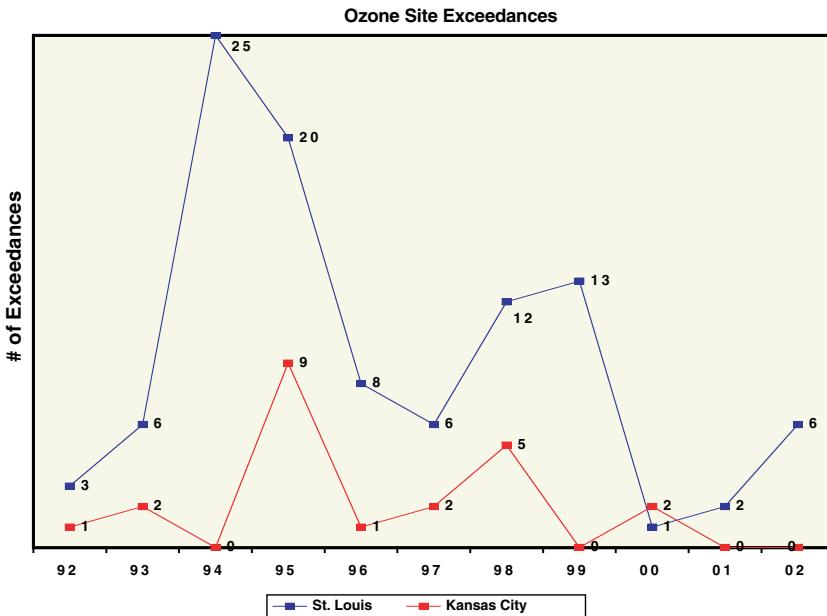
Ozone in Missouri

Naturally occurring ozone in the upper atmosphere protects the earth from the sun's harmful rays. Ground-level ozone is an irritant that damages lung tissue and aggravates respiratory disease. The pollutant is formed when heat and sunlight mix with VOC and nitrogen oxides in the lower atmosphere. Ozone can trigger a variety of health problems. Those most susceptible to ozone include children, the elderly and individuals with pre-existing respiratory problems. Even healthy young adults may experience respiratory problems at ozone levels as low as .08 parts-per-million (ppm) if they remain outdoors for extended periods. This could include individuals whose jobs require a great deal of time outdoors, such as road construction workers, or even individuals working in their lawns or gardens. The table to the left describes the Air Quality Index (AQI), a system used to warn communities in St. Louis and Kansas City on days when the air may be dangerous to breathe. During the ozone season, between April 1 and October 31, many radio and television stations in the St. Louis and

Kansas City areas provide AQI information on a daily basis.

Number of Ozone Site Exceedances Reported

In 2002, the St. Louis ozone nonattainment area reported seven exceedances of the one-hour ozone standard. Kansas City reported no exceedances. The chart below shows the number of days St. Louis and Kansas City exceeded the ground-level ozone standard in the last decade. The second chart shows the number of days the St. Louis area exceeded the ground-level ozone standard in comparison to the number of days weather conditions were favorable for exceeding this standard. This chart reflects the importance of individual actions in controlling ozone. In recent years, weather conditions have been favorable to the formation of high levels of ozone in the St. Louis area on several days. However, through carpooling, postponing mowing, avoiding use of charcoal lighter fluid and many other voluntary efforts, St. Louis area residents were able to prevent high ozone levels on many of those days.



OZONE IN ST. LOUIS

It is considered a violation of the one-hour health-based standard for ozone, when four or more exceedances occur at the same monitor in a three-year period. When a violation occurs, the area is designated to be in nonattainment. Nonattainment areas are then divided into five classifications based on the severity of the exceedances that occurred at the monitor in a three-year period: marginal, moderate, serious, severe and extreme. Under the Clean Air Act, EPA designated many areas in the country as nonattainment for ozone. In 1999, the St. Louis ozone nonattainment area was one of five areas nationwide classified as a "moderate" ozone nonattainment area.

The St. Louis ozone nonattainment area includes the city of St. Louis, and St. Charles, St. Louis, Jefferson and Franklin counties in Missouri and Madison, Monroe and St. Clair counties in Illinois. The map to the right shows the sites for air monitors in the ozone nonattainment area.

Ozone Exceedances

Even though the St. Louis ozone nonattainment area reported seven exceedances of the one-hour standard during the 2002 ozone season (April 1 through October 31), the area as a whole met the one-hour standard for the first time. The manner of calculating the standard allows an average of one exceedance per year at each site over a three-year period. As the table on Page 20 shows, even though the total number of exceedances in the area increased, the three-year average at every site is below the allowable limit.

The eight-hour standard compares the three-year average of the fourth highest eight-hour ozone concentration at each site to the standard, 0.08 ppm. There were 137 exceedances of the eight-hour standard. When the designation is made, virtually every site in the St. Louis area will be in violation.

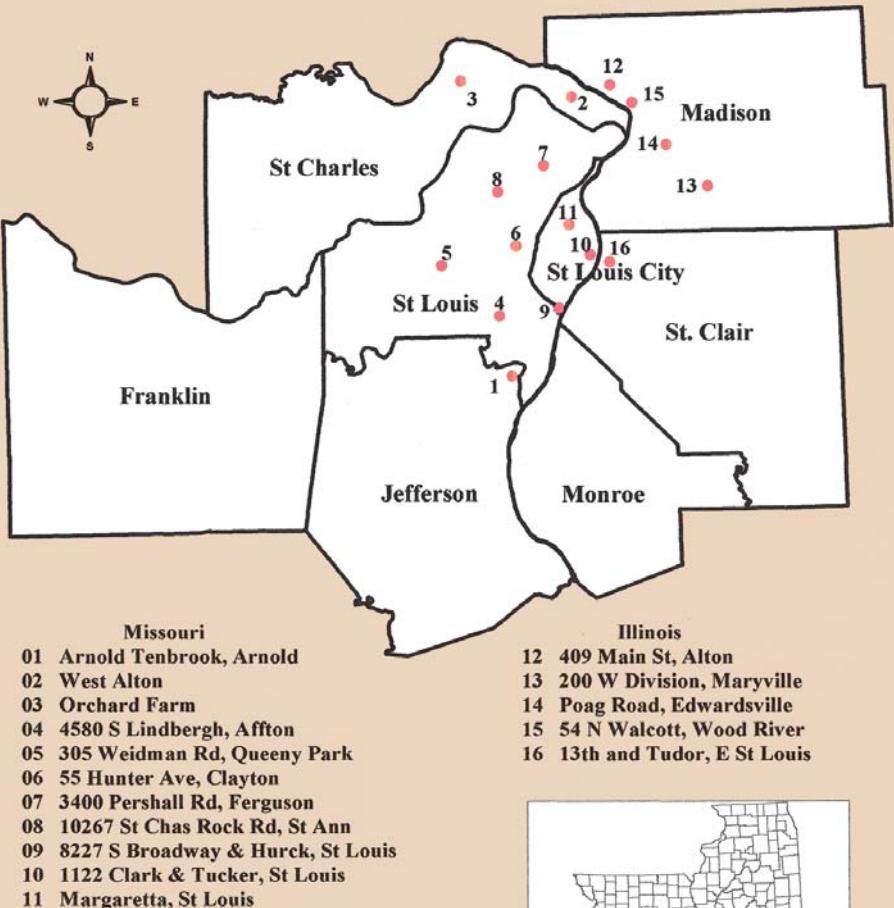
The chart shows the number of days the St. Louis area exceeded the one-hour ozone standard in comparison to the number of days weather conditions were favorable for exceeding this standard. This chart reflects the importance of individual

Exceedance: An exceedance occurs when levels of a certain pollutant are higher than those deemed safe by the federal government.

Violation: Four or more exceedances at the same air quality monitor in a three-year period equal a violation of the one-hour standard.

Nonattainment: An area that has had a violation is classified as "nonattainment." Nonattainment areas are then divided into five categories: marginal, moderate, serious, severe and extreme.

St. Louis Ozone Nonattainment Area Monitoring Sites



actions in controlling ozone. In recent years, weather conditions have been favorable to the formation of high levels of ozone in the St. Louis area on several days. However, through carpooling, postponing mowing, avoiding use of charcoal lighter fluid and many other voluntary efforts, St. Louis area residents were able to prevent high ozone levels on many of those days.

Number of Days with Excessive Ozone

St. Louis exceeded the ozone standard each summer between 1996 and 2002. The table below shows the number of days that sites in Missouri and Illinois reported exceeding the one-hour ozone standard. The St. Louis ozone nonattainment area reported six exceedances of the one-hour standard during the 2002 ozone

Number of Days with Excessive Ozone - St. Louis Nonattainment Area

Number of One-Hour Exceedances

Site	91	92	93	94	95	96	97	98	99	00	01	02
<i>St. Louis Missouri</i>												
Arnold	0	0	0	2	2	1	1	1	1	0	0	0
West Alton	0	0	0	4	4	1	1	2	3	1	1	1
Orchard Farm					2	1	0	1	2	0	0	2
S. Broadway	0	0	0	0	0	1	0	1	0	0	0	0
Clark	0	0	0	0	0	0	0	1	1	0	0	0
Newstead	0	0	0	0	1	0	0	0	0			
Margaretta										0	0	0
Sunset Hills	1	2	2	2	0	1	1	1	0	0	0	2
Queeny Park	0	0	0	5	1	0	0	1	1	0	0	0
Ladue	0	1	0	3	0	0	0	1	1	0	0	0
Ferguson	0	0	0	2	1	0	1	1	1	0	0	0
St. Ann	0	0	0	4	1	0	0	1	1	0		
Breckenridge Hills										0	0	
<i>Illinois</i>	91	92	93	94	95	96	97	98	99	00	01	02
Alton	0	0	2	1	1	2	0	0	1	0	0	0
Maryville	0	0	1	1	1	0	0	0	0	0	0	1
Edwardsville	1	0	0	0	3	0	1	0	0	0	0	0
Wood River	0	0	0	1	2	1	1	0	1	0	1	0
East St. Louis	0	0	1	0	1	0	0	1	0	0	0	0
<i>St. Louis Nonattainment Total</i>	2	3	6	25	20	8	6	12	13	1	2	6

* Jerseyville, IL, which is located just outside of the nonattainment area, also reported one exceedance of the one-hour ozone standard.

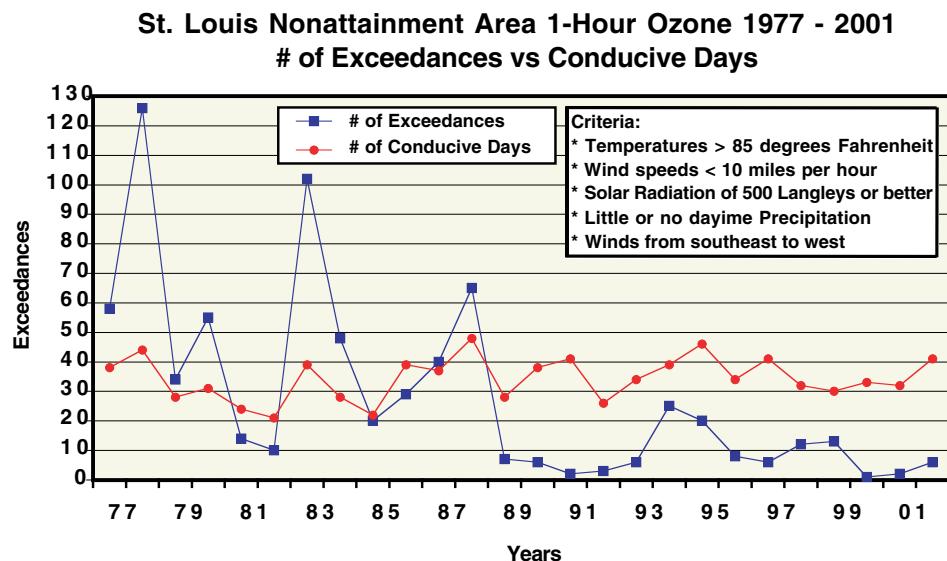
season (April 1 through October 31). Jerseyville, IL, which is located just outside of the **nonattainment area**, also reported one exceedance of the one-hour **ozone** standard.

CONTROLLING ST. LOUIS OZONE

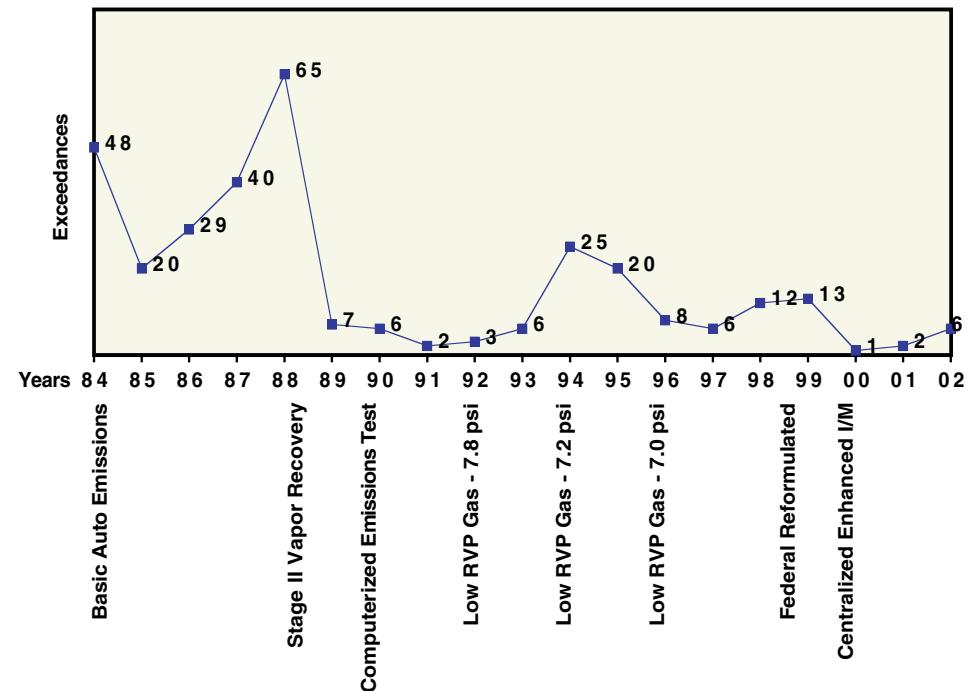
Missouri's State Implementation Plan (SIP) for the St. Louis one-hour ozone nonattainment area includes control measures and schedules for compliance with the Clean Air Act in order to attain the federal health-based standard for ground-level **ozone**. To reduce **ozone** concentrations to safe levels, the state must control both industrial and mobile sources of volatile organic compounds (VOC) and **nitrogen oxides (NO_x)**. Cars, trucks and buses are examples of mobile sources of VOCs. Major control measures benefiting St. Louis recently included a vehicle emissions inspection and maintenance program, Stage II vapor recovery systems for gasoline refueling, advanced emissions control systems for industrial sources and controls on **NO_x** emissions from utility boilers. The two control strategies leading to the greatest reductions in VOC emissions are the enhanced vehicle inspection and maintenance program and the use of reformulated gasoline.

Conformity Analysis/Determination

In accordance with the 1990 Clean Air Act - section 176(c), all transportation plans, programs and projects are required to conform to air quality plans for transportation-related pollutants in **nonattainment** and maintenance areas. The air quality



St. Louis Nonattainment Area 1-Hour Ozone 1984 - 2002
Exceedances/Major Control Implementation Start Dates



conformity analysis/determination is the Clean Air Act requirement that calls for EPA, the United States Department of Transportation and various Missouri and Illinois State, regional and local government agencies to join together in the air quality and transportation planning development process. Transportation conformity supports the development

of transportation plans, programs and projects that allow areas to meet and maintain **national air quality standards** for **ozone**, particulate matter and **carbon monoxide**, which impact human health and the environment.

The East-West Gateway Coordinating Council conducts and coordinates the



air quality conformity analysis/determination for St. Louis in cooperation with EPA, the United States Department of Transportation and various Missouri and Illinois state, regional and local government agencies. Currently, the air quality conformity analysis/determination is performed on an annual basis.

Vehicle Emissions Inspections

Programs for vehicle emissions testing and repair, or Inspection and Maintenance (I/M) programs, are key mechanisms for controlling mobile source emissions in many urban regions nationwide. The Gateway Clean Air Program is an inspection and maintenance program in the St. Louis **nonattainment** area to control mobile source emissions. The Gateway Clean Air Program represents a large portion of the Department of Natural Resources' **state implementation plan** to bring St. Louis into compliance with the one-hour **ozone** standard.

The Gateway Clean Air Program uses new emissions testing technologies. An enhanced emissions test simulates real driving conditions on a dynamometer (treadmill-like device) during testing. This measures specific pollutants from vehicles much more precisely than the older idle testing system. A second test, called RapidScreen, uses a remote sensing device to monitor exhaust emissions while vehicles are being driven on roads and highways. RapidScreen allows the very cleanest-running vehicles to pass the emissions test without visiting emissions testing stations. An improved version of the idle test is used for vehicles manufactured from 1971 through 1980 and for vehicles tested in Franklin County.

The emission standards of the enhanced emissions testing procedure became more stringent in 2002 according to rule 10 CSR 10-5.380, "Motor Vehicle Emissions Inspection." Due to the more stringent emission standards, the initial failure rate of 1981 and newer model year vehicles increased from an average of 6.7 percent to an average of 10.81 percent. The increase in the number of failed vehicles has led to more vehicles being repaired and more pollution from vehicles being reduced.

On Aug. 29, 2002, the **Missouri Air Conservation Commission** adopted a rule amendment that modified the enhanced emission test requirements for 1996 and newer model year vehicles. Beginning Jan. 1, 2003, vehicles 1996 and newer will have their on-board diagnostics systems tested. If these vehicles pass the on-board diagnostics test, they will not be subject to the new enhanced emissions testing procedure. If these vehicles fail the on-board diagnostics test, they will be subject to the enhanced emissions testing procedure. Vehicles that fail new enhanced emissions testing procedure will have to be repaired and retested. Beginning Jan. 1, 2005, vehicles 1996 and newer will no longer be subject to the enhanced emissions testing procedure and will be required to pass the on-board diagnostics test.

On-board diagnostics is a computerized system that monitors the vehicles' emissions control components. A "check engine" or malfunction indicator light (MIL) turns on if the vehicle develops a problem. To check a vehicle's on-board diagnostics, an inspector plugs a computer into the vehicle and



generates a report on the status of the vehicle's emission control system and whether the vehicle has experienced any emission-related problems that are still present. From 2000 to 2002, the Gateway Clean Air Program checked 1996 and newer vehicles using on-board diagnostics and provided the report to motorists as an advisory only.

This rule amendment adopted by the **Missouri Air Conservation Commission** also modified the enhanced I/M area waiver requirements. Beginning Jan. 1, 2003, before their failing vehicles are eligible to receive a waiver, owners with 1971 to 1980 vehicles will have to spend a minimum of \$200, and 1981-1996 model year vehicle owners will have to spend a minimum of \$450. 1997 and newer model year vehicle owners are already required to spend a minimum of \$450. In addition, all vehicles will have to show a reduction in the pollution for which the vehicle failed its initial test before becoming eligible for a waiver. Beginning Jan. 1, 2005, vehicles 1996

and newer will not be eligible to receive a waiver. A copy of the rule amendment to rule 10 CSR 10-5.380 "Motor Vehicle Emissions Inspection" is available at this Web address: www.sos.state.mo.us/adrules/csr/current/10csr/10c10-5.pdf

Additional information about the Gateway Clean Air Program is available by visiting the following Web sites:

www.gatewaycleanair.com,
www.dnr.mo.gov/alpd/apcp/gcap/ or www.cleanair-stlouis.com/gcap/.

Low Reid Vapor Pressure Gasoline and Reformulated Gasoline

Since volatile organic compounds (VOCs) contribute to the formation of **ozone**, many VOC control measures are used in the effort to reach **attainment** of the one-hour **ozone** standard. In 1994, St. Louis started using low Reid vapor pressure (RVP) gasoline. RVP is a measure of the volatility of gasoline or its tendency to evaporate into the air. Lowering RVP reduces evaporative emissions

of gasoline. Between 1994 and 1998, a state regulation restricted the RVP of gasoline sold in the St. Louis **nonattainment area** during the warmest months of the year, June 1 through Sept. 15.

Since June 1, 1999, federal **reformulated gasoline (RFG)** is a requirement at retail gasoline stations in the St. Louis **ozone nonattainment area**. This is a gasoline formula designed to burn cleaner than conventional gasoline, and to reduce both exhaust and evaporative emissions by adding an oxygenate such as ethanol and adjusting the amounts of various components already found in conventional gasoline. **This fuel program** is administered and enforced by EPA. Phase II of the **RFG** program, that began Jan. 1, 2000, requires additional emission reductions compared to Phase I. Phase II requires a minimum of 25 percent VOC reductions, a 20 percent reduction in air toxics and a five to seven percent reduction in **NO_x** emissions.

OZONE IN KANSAS CITY

The Kansas City metropolitan area was designated as a sub-marginal ozone nonattainment area under the Clean Air Act Amendments of 1990. In 1992, the Kansas City area demonstrated compliance with the standard and was redesignated to attainment and renamed an ozone maintenance area. The Kansas City ozone maintenance area includes Clay, Jackson and Platte counties in Missouri as well as Johnson and Wyandotte counties in Kansas.

In 2002, Kansas City reported no exceedances of the one-hour ozone standard for the second consecutive year. The table below shows the number of days each site reported exceeding the one-hour ozone standard between 1992 and 2002.

There were 19 exceedances of the eight-hour ozone standard in 2002, up from four in 2001. The only site to

monitor a violation is the Liberty site. Another site at Rocky Creek was installed by the Kansas City Air Quality Program this year, and also showed high eight-hour ozone levels. If similar levels continue for the three-year period necessary to assess attainment, this site may monitor a violation. The Kansas City Program also discontinued the Worlds of Fun site. The State of Kansas has also indicated its intent to install samplers in Leavenworth County and southern Johnson County.

CONTROLLING KANSAS CITY OZONE

The Kansas City area has experienced ozone problems since the late 1970s. In response to the Clean Air Act Amendments of 1990, EPA published two regulations that reduced the Reid Vapor Pressure (RVP) of gasoline in the Kansas City area. From 1990

Number of Days with Excessive Ozone - Kansas City Ozone Maintenance Area

Site	Number of One-Hour Exceedances											
	91	92	93	94	95	96	97	98	99	00	01	02
Kansas City												
Missouri												
Liberty	0	0	1	0	3	0	1	2	0	0	0	0
Watkins Mill	0	0	0	0	3	0	0	1	0	0	0	0
Worlds of Fun	0	0	0	0	2	0	0	0	0	0	0	0
Richards Gebaur	1	0	0	0	0	0	0	0	0			
Belton RG-South										1	0	0
KCI	0	1	0	0	1	0	1	1	0	1	0	0
Kansas	91	92	93	94	95	96	97	98	99	00	01	02
Wyandotte CO	0	0	1	0	0	1	0	1	0	0	0	0
Total	1	1	2	0	9	1	2	5	0	2	0	0

through 1997, RVP of gasoline in Kansas City has been reduced on three occasions. The latest change occurred during summer 2001. The Department of Natural Resources and Kansas Department of Health and Environment required that 7.0 Reid Vapor Pressure gasoline be sold in the Kansas City Maintenance Area during the peak **ozone** season.

The Air Pollution Control Program developed an **ozone** control strategy after working with the Mid-America Regional Council (MARC), the Kansas Department of Health and Environment, Kansas City local agencies and industry representatives. This strategy was to be used in place of the contingency measures presented in the 1992 Kansas City **Ozone Maintenance State Implementation Plan**. The department presented this plan to the **Missouri Air Conservation Commission** in April 1997. The commission asked the Department of Natural Resources to remove inspection and maintenance from this plan and replace it with a faster control program. After discussions with MARC and other community representatives, a control strategy including **reformulated gasoline (RFG)** was developed. The revised maintenance plan called for **RFG** to be sold in the Kansas City area starting in 2000. The **Missouri Air Conservation Commission** adopted the Maintenance Plan in February 1998. This plan required the department to recommend that the Governor of Missouri ask EPA to include the Kansas City area in the federal **RFG** program by April 2000.

RFG would have replaced low RVP gasoline as the fuel control strategy. The Department of Natural Resources and the Kansas Department of Health

and Environment hosted a Fuels Summit in June 1999. This summit resulted in a recommendation to proceed with **RFG**. The governors of Kansas and Missouri opted into the **RFG** program at the end of July 1999. However, a lawsuit against EPA blocked the use of federal **RFG** in former **ozone nonattainment areas**, including Kansas City.

The petroleum interests offered to supply Kansas City with a 7.0 RVP gasoline beginning in 2001. Missouri and the State of Kansas started 7.0 RVP gasoline programs on June 1, 2001. Additionally, Missouri adopted new requirements for cold solvent cleaning, aerospace coatings and Stage I vapor recovery systems. Cold cleaners are now required to use low vapor pressure solvents. A new rule controls VOC content of aerospace coatings. The Stage I Vapor Recovery program was amended to require enhanced reporting and record-keeping, increased inspection frequency and installation of pressure vacuum relief valves. Also, required are vapor poppets on all Stage I coaxial systems.

During January 2002, EPA issued the MOBILE 6 model for use in calculating on-road mobile emissions. Through an interagency consultation group process with the assistance of MARC, it was decided to use the MOBILE 6 model in calculating on-road mobile emissions and to develop area, point and off-road emissions inventory numbers for 1999. The MARC Board approved the Mobile Budgets created using the MOBILE 6 model. The Kansas City **Ozone** Maintenance Plan was then updated using the new Mobile Budgets and adopted by the **Missouri Air Conservation Commission** on July 25, 2002.

On Sept. 24, 2002, a new set of population and employment forecasts were released and approved by MARC. Kansas and Missouri reviewed new information and developed a new area inventory and mobile emission budget. The new Mobile Budget was adopted by the MACC on Dec. 5, 2002.

Conformity Analysis/Determination

In accordance with the 1990 Clean Air Act - section 176(c), all transportation plans, programs and projects are required to conform to air quality plans for transportation-related pollutants in **nonattainment** and maintenance areas. The air quality conformity analysis/determination is the Clean Air Act requirement that calls for EPA, the United States Department of Transportation and various Missouri and Illinois State, regional and local government agencies to join together in the air quality and transportation planning development process. Transportation conformity supports the development of transportation plans, programs and projects that allow areas to meet and maintain national air quality standards for **ozone**, particulate matter and **carbon monoxide**, which impact human health and the environment.

The Mid-America Regional Council conducts and coordinates the air quality conformity analysis/determination for Kansas City in cooperation with EPA, the United States Department of Transportation and various Missouri and Kansas state, regional and local government agencies. Currently, the air quality conformity analysis/determination is performed on an annual basis.

Lead in Missouri

Low doses of **lead** can damage the central nervous system of infants and children, causing seizures, disabilities and behavior disorders. In children and adults, **lead** causes fatigue, disturbed sleep and decreased fitness. It damages the kidneys, liver and blood-forming organs. It is suspected of causing high blood pressure and heart disease. High levels damage the nervous system and cause seizures, comas and death. The National Ambient Air Quality Standards (NAAQS) are established by EPA and limit the amount of certain pollutants allowed in outside air. These limits are based on what is safe for humans to breathe. The NAAQS standard for **lead** is set at 1.5 micrograms per cubic meter averaged over a calendar quarter. The federal Clean Air Act

Amendments of 1990 require states to bring all **nonattainment areas** into compliance with the **lead** standard. **Lead** emissions are reduced through control strategies and clean work practices. All methods of reducing **lead** emissions are included into the Missouri State Implementation Plan (SIP) for **lead**, making them enforceable.

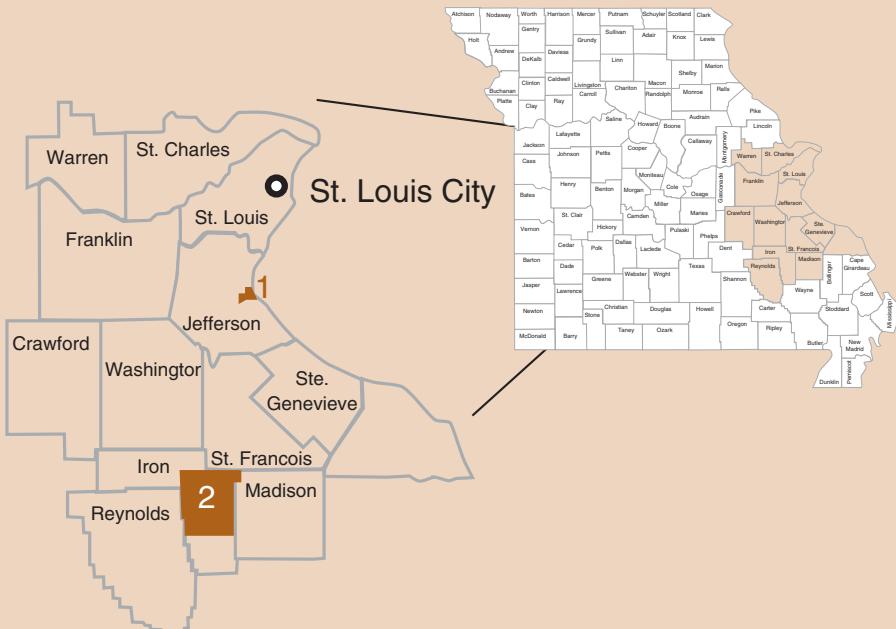
At the beginning of 2001, there were two areas designated as being in **nonattainment** for **lead** standards, Herculaneum and Glover. The Doe Run Company operates primary **lead smelters** within these areas.

Herculaneum Plan Approval

The Department of Natural Resources revised the control strategy for the Herculaneum **lead SIP**. The Air Pollution Control Program presented this plan for public hearing on Oct. 26, 2000. The Missouri Air Conservation Commission adopted the plan Dec. 7, 2000. This plan was submitted to EPA on Jan. 9, 2001 and EPA determined that the plan submittal was complete on Jan. 18, 2001.

The plan involved the development of an emission inventory protocol, observation of emission testing, oversight and review of on-site meteorological data, development of a comprehensive hour-by-hour emission inventory, development and considerable refinements of a dispersion model, three rounds of receptor modeling and model reconciliation. The emission control strategy included enclosure of the main processes at the plant and the installation of building ventilation systems. The ventilation gases are being filtered by state-of-the-art, high-efficiency filtration systems. Capital costs for the installation of

Lead Nonattainment Areas



Nonattainment Area

- 1 City of Herculaneum.....Doe Run, Herculaneum
- 2 Liberty/Arcadia Township.....Doe Run, Glover

Primary Lead Emitter

Doe Run, Herculaneum
Doe Run, Glover

these control measures was approximately \$12 million. Doe Run completed this project by the required July 31, 2002, deadline.

Air quality data reflects these improvements. All of the air monitors showed compliance with the **National Ambient Air Quality Standard for Lead** for the third quarter of 2002. The monitor that has historically registered the highest concentrations measured a 1.01 micrograms per cubic meter averaged over the third quarter. This monitor is located within a few hundred yards of the front gate of the facility.

In late August 2001, lead-bearing materials were discovered on the city streets of Herculaneum, along the route that Doe Run uses to haul concentrated ores into the plant. The

contamination decreased with distance from the plant. This material likely fell off of the tires and tailgates of trucks as they left the plant. These ores may have become airborne as vehicles drove over it. The Department of Natural Resources ordered Doe Run to clean up the streets, and much of that work has been completed. The order also required Doe Run to inspect and clean the concentrate trucks before they left the plant. Additional air monitors were installed to measure any potential impact that the street dust might be having on residents.

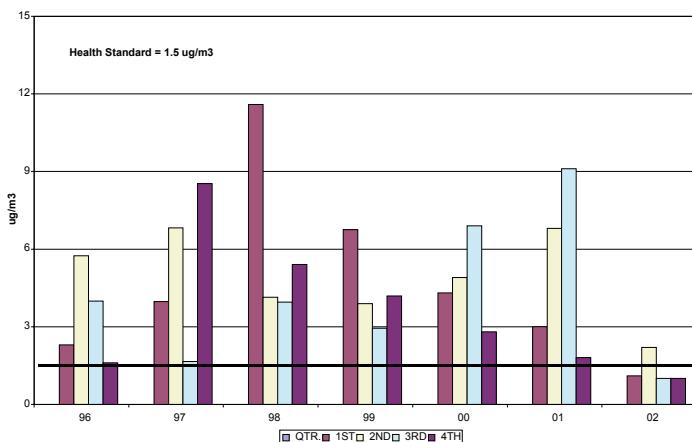
The department has kept the residents of Herculaneum informed through the use of direct mailings and Web site (www.dnr.mo.gov/env/herc.htm). Many residents have voiced concerns

about the truck traffic and concentrate hauling practices. The company continues to investigate other options for the delivery of concentrate to the facility. The department has also attended monthly Community Advisory Group meetings to help keep the residents informed and answer questions about the project.

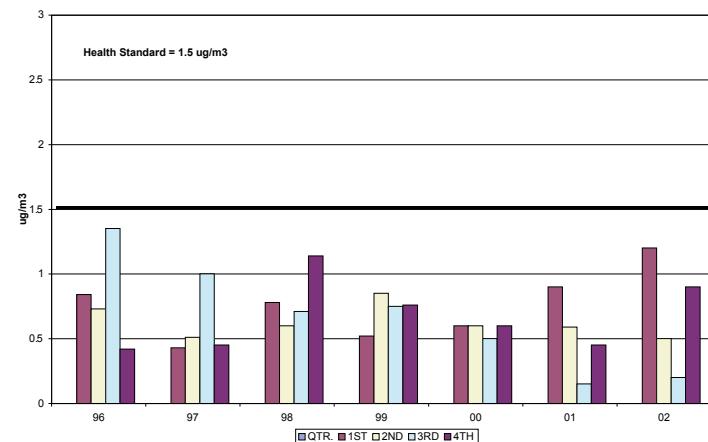
Glover Plan

Air monitors near the Doe Run-Glover Smelter have not shown a violation of the NAAQS since the SIP controls were installed on Dec. 31, 1996. The department held preliminary meetings with Glover to discuss re-designation of the area to attainment. The Department expects that a redesignation request for this area will be developed in 2003.

Doe Run Herculaneum Smelter - #7 Broad Street Site



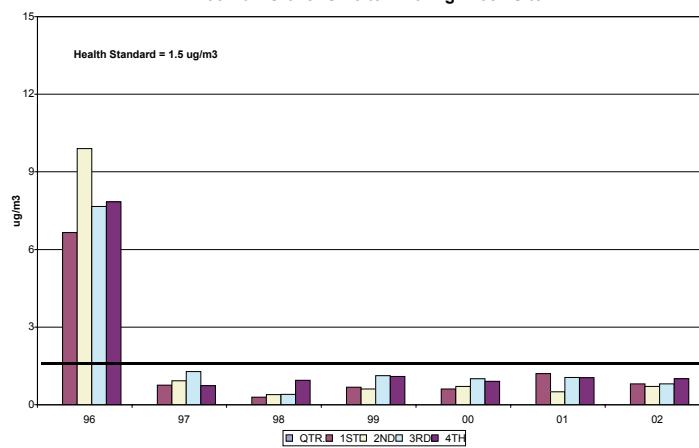
Doe Run Buick Smelter - #1 Site



Average Quarterly Concentrations of Lead in Ambient Air near Lead Smelters in Missouri

Since Missouri is the chief lead-mining district in the nation, with several smelters, the department conducts ambient monitoring for lead. Developed by EPA, the health standard for lead defines the maximum safe level for human exposure to this otherwise useful metal. The **National Ambient Air Quality Standard for lead** is 1.5 micrograms per cubic meter, averaged from all the monitor filters in one-quarter of the year. Currently, the Herculaneum smelter is the only one registering exceedances of the airborne lead standard.

Doe Run Glover Smelter - #5 Big Creek Site



Fine Particulate Matter

PM_{2.5} is primarily generated from combustion sources. It can be emitted directly as particulate, or it can be formed from gases that are emitted, which combine or condense in the atmosphere to make particles. In addition to the current ambient monitoring, the department plans to conduct sampling that could be analyzed for specific compounds or species of compounds. This would help determine what types of sources are most responsible for PM_{2.5} levels in different parts of the state.

It will take several years for the PM_{2.5} standard to be put into practice and reached. One of the reasons is because a new monitoring system for this type of pollution had to be created. Based on EPA guidance, Missouri established a network of 37 monitors at 25 sites, including speciation and continuous monitors. Because several sites do not have a complete year for 1999, including Blair Street, the highest site, Missouri and EPA may decide to use the 2000 through 2002 years to make the attainment or nonattainment designation.

1999 - 2002 PM_{2.5} Data Summary

24-hr Std = 65 mg/m³, 98th percentile Annual Mean Std = 15.0 mg/m³

St. Louis	Maximum				Annual Mean				99-01 Mean	00-02 Mean
	1999	2000	2001	2002	1999	2000	2001	2002		
West Alton	43.7	35.2	42.0	40.3	14.4	14.9	14.8	14.2	14.7	14.6
Margareta	49.4	41.8	48.4	73.5	15.3	15.0	14.1	14.3	14.8	14.5
Blair Street	64.5	45.2	52.5	56.6	17.3*	16.4	15.2	15.4	16.3	15.7
South Broadway	-	42.3	52.5	67.2	-	15.8*	14.8	15.3	15.3	15.3
Mound Street	29.0	43.3	51.3	54.7	15.8*	16.0	15.4	15.6	15.7**	15.7**
Ferguson	46.9	37.7	36.1	39.7	14.6	14.3	13.4	13.7	14.1	13.9
Clayton	46.7	51.0	36.0	38.7	15.2	14.8	13.8	14.6	14.6	14.4
Sunset Hills	-	-	28.1	40.3	-	-	12.1*	13.0	12.1	12.6
Arnold	46.5	34.8	36.8	67.7	15.2	14.7	14.5	15.1	14.8	14.8

Kansas City

Liberty	28.9	32.8	32.1	37.5	11.2	11.1	12.2	12.3	11.5	11.9
North Kansas City	37.3	39.5	43.5	38.5	12.2	13.1	13.0	12.7	12.8	12.9
Sugar Creek	36.2	37.3	39.4	40.3	11.8	12.6	12.6	12.4	12.3	12.5
Locust	34.9	41.9	37.2	38.4	14.0	13.4	14.2	14.0	13.9	13.9
Main-Plaza	-	40.4	35.8	31.7	-	11.3*	13.0	13.3	12.2	12.5
Richards-Gebaur	30.1	-	-	-	11.6	-	-	-	-	-
RG- South	-	40.9	34.5	30.7	-	10.9	11.4	11.7	11.3	11.3

Outstate

El Dorado Springs	31.2	37.3	26.5	31.7	11.3	11.5	11.6	11.8	11.5	11.6
Mark Twain State Park	38.9	34.5	33.7	30.7	11.1	11.0	11.2	11.4	11.1	11.2
Ste. Genevieve	42.1	37.0	34.5	44.2	13.8	15.2	13.7	13.7	14.2	14.2
SMSU	35.0	42.7	31.2	35.3	12.2	12.3	12.2	12.7	12.2	12.4
St. Joseph Museum	30.8	31.9	35.4	43.1	12.5	11.8	12.9	13.0	12.4	12.6

*Less than one full year of data

About The Air Pollution Control Program

The mission of the Department of Natural Resources' Air Pollution Control Program is "to maintain purity of the air resources of the state to protect the health, general welfare and physical property of the people, maximum employment and the full industrial development of the state." The program serves the public with technology, planning, enforcement, permitting, financial and information services to achieve this mission.

Technical Support

The program's staff looks at the quality of the air in Missouri using chemistry, meteorology, mathematics and computer modeling. Staff members research the sources and effects of air pollution, collecting and maintaining an annual inventory of sources that give off air pollution. In conjunction with the Department of Natural Resources' Environmental Services Program and four local agencies, the Air Pollution Control Program staff designs and coordinates an air-monitoring network and examines monitoring data. The network provides air quality data from more than 40 locations around the state. Using the monitoring data and other data on source emissions and the weather, the staff runs computer models of the atmosphere to predict air quality.

Planning

The program's staff develops rules and plans designed to protect and improve Missouri's air quality. Public participation is a vital part of the cooperative process of developing

guidelines and regulations. The staff works with businesses, federal, state and local government agencies, environmental groups and the public to exchange ideas and information on clean air issues with advisory groups, workgroups and workshops.

The staff works closely with EPA as part of the national effort to improve air quality through the Clean Air Act. The staff research and study complex environmental issues to develop air pollution control strategies that will allow Missouri's progress toward achieving and maintaining healthy air quality improvements. These air pollution control strategies are included in the **state implementation plan (SIP)** to control specific pollutants. The **Missouri Air Conservation Commission** (see p. 31) approves the **state implementation plan** and rule actions after they have gone through a public hearing process. When the **Missouri Air Conservation Commission** adopts rules, they become effective through publication in the *Missouri State Code of Regulations*. The **state implementation plan** and associated rules adopted by the **Missouri Air Conservation Commission** are submitted to EPA for inclusion in the federally approved state plan.

Permits

The program's staff reviews construction permit applications of new or modified emission sources to make sure that facilities minimize the release of air contaminants and will meet the requirements of the state and federal law and regulations.

Operating permit applications, similar to business licenses, are also received and issued. Operating permits staff identifies all the air pollution control requirements of a source of air pollution.

Enforcement

The program, through the department's regional offices, responds to complaints about air quality and help businesses comply with various federal, state and local rules. Staff conducts routine site inspections and oversees the testing of smokestacks, asbestos removal, gasoline vapor recovery equipment and other sources of air pollution. When a source violates an air quality requirement, the staff works with the facility to correct the problem and may take additional action, including the assessment of penalties necessary to obtain compliance with the requirement. Cases that cannot be resolved are referred to the Missouri Attorney General's office through the **Missouri Air Conservation Commission**.

Administration

The program's staff provides budgeting, procurement, public information and personnel services. The staff also provides liaisons for the **Missouri Air Conservation Commission**, EPA, the Missouri Department of Health, local air agencies in Kansas City, St. Louis, St. Louis County and Springfield, the American Lung Association and the news media.



2002 Revenue by Source

The Air Pollution Control Program receives funds from three sources: general tax revenue approved by the Missouri General Assembly, federal funds from EPA and four types of fees collected by the program. Since 1972, the program collected fees from businesses seeking permits to build new or modify existing emission sources. Since 1984, the state collected a fee to test the emissions of 1.2 million motor vehicles in the city of St. Louis and in Franklin, Jefferson, St. Charles and St. Louis counties. In 2000, an enhanced inspection program was initiated in all of these counties except Franklin, which still uses the basic test. Since 1993, the program collected an emission fee from air pollution sources under the Missouri Air Conservation Law. Since 1989, the program collected fees to

ensure the safe removal of asbestos; a cancer-causing substance of combined materials once used to insulate buildings. Funds received by the program are shown in the table above.

Local Agencies

A city or county may have its own air agency under two conditions: the city must be able to enforce its rules and its rules must be as strict as the state's. Local agencies issue permits, maintain their own monitoring networks and may enforce asbestos-removal laws. The local agencies are partially funded by EPA through the Department of Natural Resources. Four local governments in Missouri practice regional control over air pollution: Kansas City, St. Louis, St. Louis County and Springfield.

Missouri Air Conservation Commission

Created by the Missouri General Assembly in 1965, the **Missouri Air Conservation Commission** has seven members appointed by the governor. The commission's responsibility is to carry out the requirements of the Missouri Air Conservation Law, Chapter 643, *Revised Statutes of Missouri*. The primary duty of the commission is to achieve and maintain the **National Ambient Air Quality Standards** established by EPA. When the quality of the air meets these standards, an area is said to be in **attainment**. If an area does not meet the standards for a pollutant, however, the area is a **nonattainment area** for that pollutant.

Members serve four-year terms and the commission meets at least nine times per year. All meetings are open to the public and comments are welcome. Most meetings include public hearings where rule actions, **state implementation plans** and other matters are heard.

At meetings, the commission adopts, amends and rescinds rules. They hear appeals of enforcement orders and permit conditions and initiate legal action to enforce the rules. The commission assigns duties to local air pollution control agencies. They classify Missouri regions as **attainment** or **nonattainment areas** and approve plans to meet national standards in **nonattainment areas**.

Notices of public hearings are published in the public-notice sections of these newspapers: *Columbia Daily Tribune*, *Kansas City Star*, *Kirksville Daily Express*, *Poplar Bluff Daily American Republic*, *Springfield News Leader*, *St. Joseph News Press* and *St. Louis Post-Dispatch*. They are also published in the *Missouri Register*. To be placed on a mailing list to receive notice of public hearings and meetings, you may contact the Department of Natural Resources' Air Pollution Control Program at (573) 751-4817.

Information on public hearings and **Missouri Air Conservation Commission** meetings is also available on the Web at www.dnr.mo.gov/alpd/apcp.



Bob Holden

Governor

State of Missouri

2002 Missouri Air Conservation Commission

Harriet Beard

Chair

Andy Farmer

Vice-chair

Frank Beller

Ernie Brown

Joanne Collins

Michael Foresman

Barry Kayes

Steve Mahfood

Director

Department of Natural Resources

James D. Werner

Director

Department of Natural Resources'
Air and Land Protection Division

Roger D. Randolph

Director

Department of Natural Resources'
Air Pollution Control Program

Left to Right: Andy Farmer, Joanne Collins, Ernie Brown, Harriet Beard, Frank Beller and Barry Kayes (Not Pictured: Michael Foresman)

2002 Rules Update

In 2002, the Missouri Air Conservation Commission adopted 24 rule actions. A complete list of rules is available at www.sos.state.mo.us/adrules/csr/csr.asp. The following list highlights a few of the most significant rule actions adopted:

10 CSR 10-5.300 Control of Emissions From Solvent Metal Cleaning

This rule amendment allows industry to use higher vapor pressure solvents to clean hardened paint covered spray gun equipment using remote open and closed top spray gun cleaning machines because low vapor pressure solvent will not dissolve hardened paint.

10 CSR 10-6.110 Submission of Emission Data, Emission Fees and Process Information

This rule amendment establishes emission and service fees for Missouri facilities as required annually. The \$25.70 per ton emission fee was increased to \$31 per ton, as supported by the Air Pollution Emission Fees Workgroup.

10 CSR 10-6.070 New Source Performance Regulations, 10 CSR 10-6.075 Maximum Achievable Control Technology Regulations and 10 CSR 10-6.080 Emission Standards for Hazardous Air Pollutants

These rule amendments include updates to federal regulations that are referenced in these rules. The state is required to adopt these updates and enforce them as part of the state's operating permits program.

10 CSR 10-6.130 Controlling Emissions During Episodes of High Air Pollution Potential

This rule amendment updates the obsolete Pollution Standards Index (PSI) to the new Air Quality Index

(AQI) that was adopted by EPA. EPA established the national uniform air quality index for state and local agencies to report daily air quality to the public.

10 CSR 10-5.380 Motor Vehicle Emissions Inspection

This rule amendment changes and updates the vehicle emissions inspection requirements in the St. Louis area by including on-board diagnostics testing requirements and requiring an improvement in emissions before a waiver can be issued.

10 CSR 10-6.320 Sales Tax Exemption

This rule amendment provides a sales tax exemption for specific automotive parts used for air pollution control.

10 CSR 10-6.065 Operating Permits

This rule amendment corrects problems in the operating permit program identified by the Sierra Club and EPA. Several state requirements did not meet minimum federal requirements.

10 CSR 10-6.410 Emissions Banking and Trading

This new rule provides a mechanism for companies to acquire offsets for economic development in accordance with 643.220, RSMo.

10 CSR 10-6.120 Restriction of Emissions of Lead From Specific Lead Smelter-Refinery Installations

This rule amendment lowers the total daily throughput limit for the blast furnace and raises the total daily throughput limit for the rotary melt and reverberatory furnaces with no net lead emission increase. The Doe Run Company requested this rulemaking to accompany installation operational changes being established in the prevention of significant deterioration permit that is under development.

State Implementation Plan/Air Quality Plans

The Air Pollution Control Program submits rules to the Missouri Air Conservation Commission and writes the State Implementation Plan (SIP) and air quality plans that indicate how Missouri will achieve and maintain the federal standards for ozone and other pollutants.

The SIP is the primary method for achieving the National Ambient Air Quality Standards for compliance with the Clean Air Act. Distinct air quality plans are developed to address emission source types as well as specific air pollutants. Whenever concentrations of a specific pollutant exceed federal standards, a plan is developed to bring the area into compliance. Air quality plans include area emissions inventories, emissions growth projections, computer modeling of emissions' sources and the effects of emission sources and emission control strategies that include regulatory control measures and contingency control measures.

The Missouri Air Conservation Commission adopted the following three plan actions in 2002:

2002 Kansas City Maintenance Plan for Control of Ozone*
EPA approved the current Kansas City Ozone Maintenance Plan on

June 23, 1992. This plan action is a periodic revision to the plan that is required by the Clean Air Act after a nonattainment area has been redesignated to an attainment area. This subsequent plan includes an updated emissions inventory, emission growth projections, emission control measures, contingency measures and provides for continued operation of the monitoring network to demonstrate how the area will maintain the ozone standard for the next 10 years. The plan relies on an attainment level of emissions of volatile organic compounds and nitrogen oxides to maintain the ozone standard through a combination of control measures, which includes both stationary and mobile source controls. The plan shows that the 1999 emissions when projected to 2012 will not increase. The MACC adopted this plan action on July 25, 2002.

Redesignation Demonstration and Maintenance Plan for the Missouri Portion of the St. Louis Ozone Nonattainment Area*

This plan action includes a maintenance plan for the St. Louis area to proceed with a Missouri Department of Natural Resources' Air Pollution Control Program redesignation request. The St. Louis area was designated under the federal Clean Air Act as a moderate

nonattainment area for ground level ozone. The area attained the one-hour ozone standard in 2002. The redesignation request is based on three years of no violations of the standard during the period 2000 to 2002. A maintenance plan is required to show how the area will maintain air quality that meets the National Ambient Air Quality Standards before an area can be redesignated to attainment status. The maintenance plan includes an updated area emissions inventory, emissions growth projections, emission control measures; contingency measures and provides for continued operation of the monitoring network. The MACC adopted this plan action on Dec. 5, 2002.

Missouri State Implementation Plan (SIP), Lead Plan for the Doe Run Resource Recycling Division*

This plan action includes production limit changes that allows the facility greater operational flexibility without increasing net lead emissions. The plan demonstrates that it will continue to meet the National Ambient Air Quality Standards. MACC adopted the plan on Dec. 5, 2002.

*These plans are part of the Missouri State Implementation Plan.



Down the Road

Regional Haze

The Air Pollution Control Program is a founding member of the Central States Regional Air Planning Association (CENRAP), an organization of states, tribes and federal agencies. CENRAP is one of the five Regional Planning Organizations across the U.S. and includes the states and tribal areas of Minnesota, Nebraska, Iowa, Kansas, Missouri, Oklahoma, Arkansas, Texas and Louisiana. The organization was chartered to start and bring together activities associated with the management of regional haze and other air quality transport issues involving the central states.

The states and tribes in this region formed this association in response to federal Clean Air Act requirements to improve the visibility in Class I Wilderness Areas. Class I areas are areas of special national or regional natural, scenic, recreational, or historic value for which the Clean Air Act Amendments of 1977 afford the highest level of protection from air pollutants. Two are located in Missouri; Mingo Wilderness Area (~8,000 acres) about 20 miles southwest of Poplar Bluff and Hercules Glade Wilderness Area (~12,300 acres) about 35 miles southeast of Springfield.

A variety of air pollutants contribute to visibility impairment. Most of the impairment is caused by small particles in the atmosphere. Some of the fine particles are released directly, and some of the particles are formed in the atmosphere as the product of chemical reactions. Sources of haze-causing pollution include electric power generation, industry, automobiles and trucks, agricultural

and forestry burning and many others. In Missouri, sulfate, a by-product of fossil fuel combustion, is likely to be a dominant source of visibility impairment.

These small particles, and their gaseous precursors, can be transported great distances affecting visibility over hundreds of miles. Because of this, visibility impairment does not respect state boundaries, and is a regional problem. EPA recognized this by encouraging states to form regional planning organizations.

The primary role of CENRAP is to coordinate the science and technology decisions that will be needed to support air quality management decisions. CENRAP functions through organized workgroups comprised of members from the states and tribes along with representatives of federal agencies, stakeholders and other interested parties. The Department is actively participating in the Emission Inventory, Modeling and Implementation and Control Strategies workgroups. Other workgroups include Monitoring, Communications and International Issues.

Although department staff will participate in these regional planning efforts, the final decisions regarding the management of air quality in Missouri will continue to be made within the state. Good visibility in Missouri's natural areas is valued by our citizens, and is an important element of people's experience when visiting these places. Through participation in CENRAP the department's Air Pollution Control Program hopes to address these issues and will strive to develop effective measures to improve visibility.



Hercules Glade Wilderness Area . Photographs provided by David A. Castillon, Ph.D., Geomorphologist.

Air Quality Information

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program(573) 751-4817
P.O. Box 176 Jefferson City, MO 65102-0176

General Department of Natural Resources Information1-800-361-4827
Relay Missouri (for use by the hearing impaired)1-800-735-2966
Jefferson City Regional Office(573) 751-2729
Kansas City Regional Office(816) 622-7000
Northeast Regional Office (Macon)(660) 385-2129
St. Louis Regional Office(314) 416-2960
Southeast Regional Office (Poplar Bluff)(573) 840-9750
Southwest Regional Office (Springfield)(417) 891-4300

IN CASE OF AN ENVIRONMENTAL EMERGENCY:

Missouri Department of Natural Resources
Emergencies only 24 hours a day(573) 634-2436
Emergency Response Office weekdays(573) 526-3315

U.S. Environmental Protection Agency - Region 7(913) 551-7020
National Response Center1-800-424-8802
(A service of the U.S. government for reporting oil and chemical spills)

CHEMTREC1-800-424-9300
(A service of the chemical industry for reporting chemical spills, leaks and fires)

OTHER AIR QUALITY ORGANIZATIONS:

Missouri Department of Health(573) 751-6400
St. Louis Regional Clean Air Partnership(314) 645-5505
Heartland Sky (Kansas City)(816) 474-4240
American Lung Association of Eastern Missouri(314) 645-5505
American Lung Association of Western Missouri(816) 842-5242
Kansas City Health Department(816) 513-6314
City of St. Louis - Division of Air Pollution Control(314) 613-7300
St. Louis County - Department of Health(314) 615-8923
Springfield-Greene County - Air Pollution Control Authority(417) 864-1662



Air Pollution Information on the Web

There is a wealth of information about air quality issues on the Web. You may find some of the following World Wide Web addresses helpful (addresses were correct at the date of this publication):

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Air Pollution Control Program (www.dnr.mo.gov/alpd/apcp)

Outreach and Assistance Center (www.dnr.mo.gov/oac)

General Department Information (www.dnr.mo.gov)

The complete Missouri Air Law
(www.moga.state.mo.us/statutes/c643.htm)

Department of Natural Resources - Air Quality Monitoring
(www.dnr.mo.gov/alpd/esp/esp_aqm.htm)

Code of State Regulations
(www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp)

Environmental Regulatory Agenda
(www.dnr.mo.gov/regis/regagenda.htm)

Gateway Clean Air Program (www.gatewaycleanair.com)

Department of Natural Resources (www.dnr.mo.gov/alpd/apcp/gcap/)

Clean Air-St. Louis (www.cleanair-stlouis.com/gcap/)

U.S. ENVIRONMENTAL PROTECTION AGENCY

EPA Region 7 (Kansas City) (www.epa.gov/region07/)

Office of Air and Radiation (www.epa.gov/oar/)

Air Links - EPA Air Quality Publications (www.epa.gov/airlinks/)

OTHER AIR QUALITY ORGANIZATIONS:

St. Louis Regional Clean Air Partnership (www.cleanair-stlouis.com/)

Heartland Sky (Kansas City)
(www.marc.org/environment/heartsky.htm)

American Lung Association (www.lungusa.org/)

Air and Waste Management Association (www.awma.org/)

Missouri Department of Health (www.health.state.mo.us/)

DAILY AIR QUALITY FORECASTS:

Kansas City (www.marc.org/airquality/airqual.htm#skycast)

St. Louis (www.cleanair-stlouis.com/index.html)

GLOSSARY

Attainment: The designation given to an area that meets all National Ambient Air Quality Standards.

Carbon monoxide (CO): A poisonous gas that is odorless, colorless and tasteless. At low levels it causes impaired vision and manual dexterity, weakness and mental dullness. At high levels it may cause vomiting, fast pulse and breathing followed by a slow pulse and breathing, then collapse and unconsciousness.

Exceedance: An exceedance occurs when levels of a certain pollutant are higher than those deemed safe by the federal government.

Inhalable particles (PM₁₀ and PM_{2.5}): A broad class of particles sometimes simply referred to as "soot." One of the "criteria pollutants," PM₁₀ particles are 10 microns or smaller in diameter. The pollutant increases the likelihood of chronic or acute respiratory illness. It also causes difficulty in breathing, aggravation of existing respiratory or cardiovascular illness and lung damage. In addition it causes decreased ability to defend against foreign materials. New laws have been passed regulating PM_{2.5}, an even smaller and more harmful class of fine particles less than 2.5 microns in diameter. Missouri is beginning to monitor its concentrations.

Lead (Pb): Airborne lead appears as dust-like particles ranging from light gray to black. Low doses may damage the central nervous system of fetuses and children, causing seizures, mental retardation and behavioral disorders. In children and adults, lead causes fatigue, disturbed sleep and leads to decreased fitness, and it damages the kidneys, liver and blood-forming organs. It is suspected of causing high blood pressure and heart disease. High levels damage the nervous system and cause seizures, comas and death.

Missouri Air Conservation Commission: The governor appoints this seven-member group. The commission carries out the Missouri Air Conservation Law, Chapter 643, *Revised Statutes of Missouri*. The primary duty of the commission is to help Missouri achieve the National Ambient Air Quality Standards set by the U.S. Environmental Protection Agency.

National Ambient Air Quality Standards (NAAQS): Standards set by the U.S. Environmental Protection Agency that limit the amount of six air pollutants allowed in outside air. These six are carbon monoxide, inhalable particles, lead, nitrogen dioxide, ozone and sulfur dioxide. The limits are based on what is safe for humans to breathe.

Nitrogen dioxide (NO₂): A poisonous, reddish-brown to dark brown gas with an irritating odor. It can cause lung inflammation and can lower resistance to infections like bronchitis and pneumonia. It is suspected of causing acute respiratory disease in children.

Nonattainment area: A region in which air monitors detect more of a pollutant than is allowed by the National Ambient Air Quality Standards set by the U.S. Environmental Protection Agency. The U.S. Environmental Protection Agency may designate a region as a "nonattainment area" for that pollutant.

Ozone (O₃): Three atoms of oxygen; colorless gas with a pleasant odor at low concentrations. The layer of ozone in the atmosphere protects the earth from the sun's harmful rays. Ground-level ozone is a summertime hazard produced when hydrocarbons from car exhaust and other fumes mix in the presence of sunlight with oxides of nitrogen from power plants and other sources. Ozone is more easily recognized in smog, a transparent summer haze that hangs over urban areas. The result is a gas that aggravates respiratory illness, makes breathing difficult and damages lung tissues. Victims include people with lung disease, the elderly, children and adults who exercise outside.

Ozone Violation: One-hour standard - Four or more exceedances of the one-hour ozone standard occurring in a three-year period at the same monitoring site. Eight-hour standard – A three-year average of the fourth-highest eight-hour daily maximum at one site that is above .84 ppm.

Reformulated Gasoline (RFG): A fuel blend designed to reduce air toxins and volatile organic compound (VOC) emissions by decreasing the amount of toxic compounds such as benzene, lowering the evaporation rate and increasing the amount of oxygenate blended with the fuel.

Smelter: A facility that uses chemical and physical processes to turn metallic ores (such as lead sulfide concentrates) into sellable pure metal and alloy products.

State Implementation Plan (SIP): A plan submitted by the Missouri Department of Natural Resources to the Environmental Protection Agency for complying with national air quality standards. Each plan concerns one air pollutant for one nonattainment area.

Sulfur Dioxide (SO₂): A colorless gas with a strong, suffocating odor. Causes irritation of the throat and lungs and difficulty in breathing. It also causes aggravation of existing respiratory or cardiovascular illness.